

Book reviews

SHOREBIRDS OF AUSTRALIA

Edited by Andrew Geering, Lindsay Agnew and Sandra Harding

2007. Published by CSIRO Publishing, Melbourne. 242 pp., colour photographs, maps and line drawings. Paperback, \$A49.95, ISBN 978-0-643092-26-6.

This is the first book dedicated to Australian shorebirds to appear for 20 years. It provides a much-needed and comprehensive updated picture of what is currently known about Australia's resident waders and the migratory wader species that spend the non-breeding season here during each Northern Hemisphere winter. It is edited by three members of the Queensland Wader Study Group, who started out with the intention of the book being mainly about the waders of Moreton Bay, south-east Queensland. But by widening its scope and using a total of ten authors (three from outside Australia) it has become a book valuable to everyone interested in waders both throughout Australia and overseas.

The seven chapters cover all aspects of wader ecology. Valuably, it starts with *Evolutionary History and Taxonomy*, a well-researched and up-to-date background to the current classification of shorebirds. This is followed by *Breeding Ecology*, with particular reference to the way that Australian resident species have adapted to the wide range of habitats and climatological conditions of the continent. There is then an excellent chapter on *Migration*, which covers both basic knowledge of this process and specific information relating to waders visiting Australia. An authoritative chapter follows this on *Feeding Ecology and Habitat Selection*, a most important area since food availability is the basis for wader distribution and for the evolution of migratory paths, as well as overall population levels. The next chapter is a useful basic guide to wader *Plumages and Topography*. In particular it explains where moult patterns, particularly of the flight feathers, are sometimes different from those of waders, especially immature birds, spending the non-breeding season (winter) in the Northern Hemisphere.

The largest section of the book, occupying 117 pages, is the *Species Descriptions*. In this chapter, 55 species regularly occurring in Australia are covered in detail (two pages, including photographs and a map, being allocated for each species). There is also a brief paragraph on each of a further 23 shorebird species that occur in Australia less regularly. About half of the text on each species relates to identification characteristics, but there is also basic information on range, habits, habitats and numbers. Finally the last chapter considers the *Threats to Shorebirds and Conservation Actions*. This is a particularly topical subject given the major detrimental changes occurring in the migratory stopover locations throughout Asia. There is also a bibliography of 274 references.

The book contains a large number of photographs, with typically three for each species and additional ones illustrating the earlier chapters. These are generally of a high quality and are taken by a range of photographers from both within Australia and overseas. It is a pity that the size of many photos is too small for the quality of some of them to be fully appreciated.

Inevitably, in any book one finds small errors in the text and captions to photographs. In the latter there were also some opportunities missed for identifying the age and plumage of birds. Space has prevented the illustration of as wide a range of age/breeding condition plumages as are normally included in an identification field guide. An unfortunate error is an out-of-date web site reference for the Victorian Wader Study Group (p. 213): it should be: www.vicnet.net.au/~vwsg.

I have two main concerns. I think too much of the book was probably allocated to the species descriptions, or more specifically too much of those was taken up with plumage and other identification related descriptions. These are already well covered in the various field guides and, extremely comprehensively, in the *Handbook of Australian, New Zealand and Antarctic Birds*. The second concern is the lack of specific information on the detailed distribution of each species within Australia and an easy guide to locations where each is likely to be found. The maps, which had been included from the Birds Australia 'Atlas', do not really give a balanced picture of the distributions. The long list of sites of 'international importance' that is included does not really serve this purpose and is also significantly out of date (not the fault of the editors). It might have been better to reduce the extent of the plumage descriptions and insert a chapter describing and evaluating the principal wader habitats around Australia and giving a more quantitative picture of where each species may be located.

Overall, however, this is a first class book that everyone interested in waders, from beginner to expert, will find interesting and valuable. It should be part of the library of all waderologists and other serious field ornithologists and bird watchers.

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SPECIATION IN BIRDS

By Trevor Price

2008. Published by Roberts and Company, Greenwood Village, CO, USA. Distributed in Australia by CSIRO Publishing, Melbourne. 479 pp., 120 colour figures. Paperback, \$US59.95, \$A99.95, ISBN 978-0-974707-78-5.

Speciation in Birds represents an important event in the history of the subject. Although it is not the first such synthesis of its kind focusing specifically on birds, it nonetheless offers a novel view of the topic and presents an abundance of ideas for further consideration. The last great monograph in this tradition was only in 2003, with Ian Newton's book *The Speciation and Biogeography of Birds* (Academic Press, 668 pp.; see review in *Emu* 105, 93–95). Where Newton's volume has a heavy emphasis on global patterns of geography and biogeography, Price's work is much more focused on the mechanisms of speciation and population divergence. The two are complementary: where Newton's reviews many of the classical aspects of ecology, behaviour and extrinsic factors promoting speciation, Price's book, although sweeping in its coverage of the history of the topic, has much more original material and perspectives that have yet to be vetted by the scientific community, and often

veers toward intrinsic, behavioural mechanisms promoting speciation. Whereas Newton covers in depth the fossil history of birds and the development of avifaunas over time, Price's focus is on theoretical issues involved in speciation, rather than the actual history of birds. Both perspectives are important and Price's book is a useful update, even if only four years have passed since Newton's comprehensive volume. A surprising amount of new work has occurred in just that time, and the difference in emphasis and focus alone results in a completely different work.

Speciation in Birds has 17 chapters, spanning a wide range of topics from geographic variation, to ecological speciation, behaviour and ecology, social selection, song, mate choice, sexual selection and genetic incompatibility. The first five chapters are in some ways the most exciting, because it is here that Price truly grapples with the new findings that have been promoted as major causes of speciation in birds. Although giving an obligatory nod to the father of bird speciation studies, Ernst Mayr, Price quickly dismisses the supposed role of founder effects in speciation. Relying on recent theoretical investigations suggesting that natural selection is a much more powerful force than genetic drift, Price concludes that 'there is very little empirical evidence supporting an important role for genetic drift in the evolution of phenotypic traits....' (p. 49). Thus begins a theme that is reiterated throughout the book: the overwhelming importance of natural selection for generating novel bird species. This alone is a novel perspective for ornithology, although recent work in a variety of disciplines has adopted this perspective. The ecology of bird speciation was up until now a scattered literature, but Price's book goes a long way toward synthesising, appraising and evaluating, this important new direction.

It will surprise many ornithologists that, if Price's book is a good measure of the times, much of the exciting work in speciation is coming not from systematics and phylogeography, but from behaviour and ecology. Surprisingly, phylogeography is not granted a chapter of its own, perhaps because it is considered more of a pattern, a tool to be used to facilitate other lines of inquiry, and less of a *mechanism* of speciation. This approach is illustrated in a number of places, such as when his own work on the phylogeographic history of Old World *Phylloscopus* warblers is used to illustrate ecological mechanisms promoting divergence in migration, morphology and song (Chapter 5 on *Ecological Speciation*, Chapter 10 on *Social Selection and the Evolution of Song*, and Chapter 11 on *Divergence in Response to Increased Sexual Selection*). The chapter on geographic variation (Chapter 3) is itself focused more on mechanisms promoting phenotypic variation and divergence than on continental patterns of variation, phylogeny and population history. On the contrary, the bulk of Price's book is devoted to showing how diverse behavioural and ecological phenomena have important implications for avian speciation. In the early chapters, many of the examples come from Darwin's finches, which Price worked on as a graduate student with Peter and Rosemary Grant. Darwin's finches remain the best example in birds of the relationship between changes in food availability (seeds) and changes in morphology (bill size and shape) over time. The clear evidence for a role of the changing environment in morphological divergence suggests extended consequences into the realm

of speciation, for example by modifying foraging traits that are also used as species-recognition cues. Another route towards reproductive isolation is when beak size changes owing to birds tracking changing food resources in turn drives the evolution of song characteristics, as has also been demonstrated in Darwin's finches (Podos 2001, *Nature* **409**, 185–188). Although Price is clearly enthusiastic about ecological speciation – the idea that ecologically driven divergent selection can ultimately contribute to reproductive isolation – he also demonstrates some scepticism, pointing out (and again recalling his work on *Phylloscopus* warblers) that many sister-species are old and it is therefore challenging to draw links between differences in ecology and reproductive isolation.

It is in the realm of 'social selection' that Price's book begins to traverse what may be *terra incognita* for many speciation biologists. This is where many ideas on adaptive divergence in birds will be new to readers, where Price ties together diverse strands of data to construct new syntheses and connections between behaviour and speciation. Social selection is an older term introduced by Mary-Jane West-Eberhard to encompass situations in which social competition, often intrasexual, can drive the evolution of elaborate signals. Price dusts it off and presents it as a major mechanism of divergence in birds, which encompasses but is not restricted to sexual selection. In these chapters (Chapters 9–12), Price borrows from a remarkable range of fields, from psychovisual studies to neural network models of trait divergence to experimental studies of mate choice. Cultural evolution of song is another major topic within the context of social selection that is reviewed with flair and a deep familiarity with a vast but scattered literature. Australian readers will take comfort in the important contributions to this area made by experiments on the Zebra Finch (*Taeniopygia guttata*). We are reminded of the famous experiments by behaviourist Nancy Burley in which female Zebra Finches preferred males with colour bands, and are encouraged to think of this experiment in terms of the origin of never-seen-before mutations in bird populations, and how their fate will be influenced by preferences that themselves are either arbitrary or the result of past selection for something else. For example, Burley's surprising finding of a preference of both Long-tailed (*Poephila acuticauda*) and Zebra Finches for finches with exaggerated white crests attached to their heads could be interpreted as either an arbitrary, non-adaptive preference, or one that is based on the females being attuned to finding white-feathers that they use for lining nests (Burley and Symanski 1998, *American Naturalist* **152**, 792–802). Regardless, the point is that such a novel signal could be seized upon by females and provide an additional target for mate-choice preference, driving the species to a new equilibrium and potentially resulting in speciation. Although the links between such behavioural experiments and actual speciation events have never been made experimentally in birds, Price highlights them because of their potential role in diversifying species.

From a Southern Hemisphere point of view, *Speciation in Birds* holds some interest. Solomon Island birds are mentioned in a number of places as examples of allopecies, geographic variation, and in the contexts of island biogeography and island endemism. The Solomon Islands Monarch Flycatcher (*Monarcha castaneiventris*) and Golden Whistler (*Pachycephala pectoralis*) complexes, as well as the extinct Huia

(*Heteralocha acutirostris*) of New Zealand, are among the many birds illustrated by Emiko-Rose Paul and Susan Young with dazzling colour and clarity throughout the book. Several of Julian Ford's classic papers on hybridisation in Australian birds are discussed in an appendix to the chapter on hybrid zones (Chapter 15). On the down side, the great pageantry of continental speciation in Australia is little discussed, despite the recent flowering of phylogeographic studies (e.g. Joseph *et al.* 2006, *Journal of Avian Biology* **37**, 625–636; Joseph and Wilke 2007, *Journal of Biogeography* 2007, **34**, 612–624). The recent report of putatively sympatric speciation in *Nesospiza* buntings of Tristan da Cunha (Ryan *et al.* 2007, *Science* **315**, 1420–1423), one of the most exciting and no doubt controversial stabs at this subject, is barely mentioned, and then not in the context of sympatric speciation. Perhaps it came too late for an in-depth discussion – we can wait for the second edition, perhaps. Despite the extraordinary breadth of the book, there still appears to be too much material to cover in depth what some would consider the greatest hits of the recent speciation literature. However, what is missed in terms of coverage of classics is amply made up for by an overabundance of novel perspectives and thought-provoking syntheses.

Overall the real excitement in this book will be felt by those interested in behaviour, sexual selection, song and mate and species recognition – which is probably a large swath of biologists working on birds today. In some ways, *Speciation in Birds* picks up where Mayr's *Systematics and the Origin of Species* leaves off, and adds to the fundamental mechanism of geographic isolation a whole panoply of processes that can operate in geographically divided groups and accelerate the process of ecological, morphological, vocal and behavioural divergence. The wealth and diversity of ideas in this book is staggering, and, even if it doesn't answer all the questions it sets out to, it will at least provide an abundance of hypotheses for the next generation of bird speciation biologists to test, refute and recast until the next speciation synthesis.

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TAWNY FROGMOUTH

By Gisela Kaplan

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Typically, book reviews end with some variant on the phrase 'I encourage *'some group of individuals'* to ensure that they acquire this volume for their library'. With considerable regret (owing to my respect and admiration for the bird), I must start my review of *Tawny Frogmouth* by saying that the volume does not have enough redeeming features to make it worthwhile to buy. While the vast majority of my review will focus on negative aspects, there is some useful information presented in the book and there are some stunning photographs (but also some exceedingly poor ones). As a species, this frogmouth deserves to be the focus of a volume but I would suggest in the strongest

possible terms that the author has done the animal a disservice with her treatment.

A major focus of the book is the presentation of 'data' which the author ostensibly collected during 10 years of 'systematic observation'. However, none of these data appear in the peer-reviewed literature, at least none that she cites or none of which I am aware. It is never made explicitly clear what the sample size of number of individuals, number of observations etc. is, whether or not birds were individually marked or which observations were made of wild birds and which of captive. In my opinion, the 'data' represent a collection of qualitative anecdotes, which are impossible to verify or assess in terms of quality and accuracy. I do not accept this as being good enough.

The author describes innumerable new or novel traits exhibited by frogmouths, but without citations to published works in which these are scientifically established. The actual evidence provided for many of these traits comes from photographs taken by the author. For example, Figure 7.7 is a fuzzy picture of a female purportedly showing mucous dripping from the beak. This along with the statement of 'I noticed mucous dripping, more than once' is the body of evidence used to suggest that antibodies are transferred from adult to chick via fluids. Figure 8.5 is said to illustrate how a male looks 'sexually attractive'. The figure caption contends that 'such postures and gestures are followed by mating' but there is no indication of the proportion of times this pose (which doesn't look particularly unique compared to what I have seen these birds do) is followed by copulation. In short, I am simply not convinced that the author is the only person to have seen these behaviours and if she is, why has she not published her observations in the literature.

The organization and writing is also poor. I cannot understand the utility of why two separate methods of referring to the literature cited are used. There are both footnotes and the more commonly used form (author and date) within the text. I spent a large amount of time getting frustrated while reading, flipping between the list of endnotes and the list of literature cited. Why didn't the publisher demand the use of one or the other? The author makes constant introductions to topics in one chapter followed by a note that the reader should skip ahead to another chapter (or back to one) to read more, e.g. bottom paragraph on page 46. This leads to considerable repetition. Likewise repetition is introduced by the substantial descriptions in the text of the book, of similar points made in figures and their captions. Finally the author goes into great detail about behaviours (e.g. male trance beginning on page 85) that seem rather unimportant in the context of the species' general biology while short-changing fundamental processes (e.g. foraging and diet). The writing is extremely sensationalist in places and, in most of the book, rather long-winded.

There are far too many errors of fact and presentation for a volume of this nature. I cite but a few (quoting directly were appropriate) to support this contention. Page 3: oilbirds do not use echolocation to 'find their way home'; they use vision, while echolocation is used for orientation to locate their nests within caves. Page 14: bowerbirds do not have powder-down feathers. Figure 2.7: the Tawny Frogmouth's beak is not unique but is in fact similar to that of most caprimulgids. Page 25: digits are not apposable but are opposable. Page 28: 'healthy feet' are 'surely' NOT 'a brilliant design feature' but the evolutionary

product of natural selection. Page 53: the hypothesis that frogmouths 'once roosted on the ground but were forced into the trees by introduced mammalian predators' is completely baseless. Page 54: 'Eastwood State Forest', barely 10 km from the author's home in Armidale, was officially renamed the Imbota Nature Reserve more than four years before the volume was published. Page 57: 'some night temperatures on the Tablelands can plummet to a low as -13°C in winter. How can an animal exist in such an environment...' is total nonsense! Where I live in Canada, mid-winter temperatures commonly fall below -40°C , yet a number of birds over-winter, even without the benefit of being able to use torpor. Page 57: torpor is NOT 'a regulatory mechanism to cope with a loss of heat'. Page 71: faeces are not 'ejaculated' they are ejected or voided. Page 96: 'Frogmouths belong to the group of birds that lays eggs consecutively' – but surely all birds do this? Page 98 (and elsewhere): we weigh animals to measure mass. Weight is a measure of force and the units are N m^{-2} , not g and kg. Page 113: 'in many ways, frogmouths are as expressive emotionally as parrots and cockatoos'. This is complete rubbish. Page 115: 'piloerection' should be ptilioerection. Page 123: '...range of 100–125 dB and can be heard for miles'. All units should be in metric and 125 dB is virtually impossible to achieve by natural means, even bat echolocation calls are not that intense. Further, the author does not say how these intensities were measured. Page 124: the units of frequency are Hertz, not Herz as is written numerous times. Figures 8.9–8.12: the axis labels are so small as to be unreadable and the nature of the horizontal axis is unclear. Furthermore, my interpretation of the sonograms is that these sounds are virtually indistinguishable – how an amateur ornithologist could hope to discriminate between them is beyond me. Page 137: 'Dell 1970' is not in the list of literature cited. Colour plates: why in a book about frogmouths is there a colour plate of a lace monitor supposedly eating a magpie chick (can't actually tell from the photo). Likewise, the photo of the albino frogmouth adds nothing to our knowledge of the species. These photos are padding.

On page 116 the author argues 'For a long time, it was considered impossible or unscientific to think of birds expressing emotions'. I would most vehemently suggest that this is STILL the case. I do not mean that birds do not express emotions, only that the scientific means to evaluate what and how this is achieved by birds (or other animals for that matter) is currently not available (I would direct readers to Donald Griffin's won-

derful book *Animal Thinking* (Harvard University Press) for a thoughtful consideration of this topic). For example Figure 8.3 allegedly shows different 'moods' shown by the same individual. In my opinion, these 'facial expressions' could be interpreted in numerous ways with no requirement to invoke 'emotion' as the reason for the differences. The theme of 'emotion' runs rampant through the volume and the following collection of quotes illustrates the extreme use of anthropomorphism by the author, all without a solid basis in scientific fact. 'Apart from the stoic lack of responding, tawny frogmouths are quite capable of ending the imposition'. 'She ignored all suitors...until one day she was with a particularly handsome (and seemingly much younger) male'. 'Every one of his movements was extremely cautious and circumspect'. 'The charming subdued nestlings turn into demanding monsters and mischievous pranksters'. 'The red ring in the eye...in case of rising anger is an extremely parsimonious signal'. 'A most heart-wrenching sound'. 'Tawny frogmouths often have a charming disposition...are avid communicators and stubborn as mules at times'. Without the data that form the basis for these statements I simply cannot believe them, and I do not think amateurs or budding ornithologists should think that this is how professionals view birds.

The publisher suggests that the book is aimed at 'Natural history enthusiasts; amateur and professional ornithologists; and upper-secondary level students and undergraduate students'. However, the tone and style of writing and the level of detail presented made me alternatively view the intended audience as professional scientists, the general public, beginning ornithology students and young children. The publisher needs to be held accountable and should have helped the author considerably to produce a better product. A thoughtful and thorough copy editing would have demanded presentation of the data from the authors 'systematic studies', done wonders to prune the errors, and toned down dramatically the romantic anthropomorphisms.

When all is said and done, unfortunately, the best use I will find for this book is as a 'how not to' exercise for my honours and post-graduate students. If you really want to learn about frogmouths, buy Holyoak's excellent *Nightjars and their Allies* (2001, Oxford University Press) or Volume 4 of *HANZAB* (1999, Oxford University Press).

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