

Book reviews

SEX RATIOS: CONCEPTS AND RESEARCH METHODS

Edited by Ian C. W. Hardy

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Why do Seychelles Warblers produce mostly daughters when they are on good territories, and why would a female Eclectus Parrot produce 30 sons in a row? Why do most species produce roughly the same number of males and females whereas some show dramatic skews towards one of the sexes? Sex allocation was first mused over by Darwin but was raised to the status of a field in its own right when R. A. Fisher formalised many of the arguments in his landmark 1930 book *The Genetical Theory of Natural Selection*. Sex allocation, or the differential investment by parents in offspring of either sex, is now remarkably well understood to the point where it has been hailed as a triumph of evolutionary theory.

But not necessarily so for birds! Explicit theoretical predictions of adaptive sex ratios can be made for many of the simpler taxa, but birds and mammals have proven much more difficult for four main reasons. First, chromosomal sex determination means there are fewer potential mechanisms for adaptive sex allocation in these groups. Second, there have been difficulties in observing the primary sex ratio (i.e. at conception versus birth, hatching or fledging). Third, scientists have been poor at reporting both the context and occurrence of the seemingly less interesting cases when sex ratios are even. Finally, theory for predicting sex ratios in birds and mammals is sometimes lacking as they often have complex structured societies, overlapping generations, and other complicating factors that violate the assumptions made by sex ratio theory.

Birds only feature in some of the chapters of *Sex Ratios: Concepts and Research Methods*, which is largely designed as an aid to researchers in the broad field of sex allocation. This multi-authored book aims to explain the complex theory and genetics underpinning the field, and the broad range of statistical techniques for examining sex ratio data, and to summarise the wealth of research on taxa ranging from bacteria, malaria, plants, parasitic wasps, mites, aphids to humans. I found the book well laid out, and felt that researchers would have little difficulty extracting the subject matter relevant to their particular needs without having to read the whole book. Ornithologists hoping for an overview of the field and a summary of the theory and data relevant to birds could start with the chapters from Part 1 (Sex ratio theory) and Part 4 (Animal sex ratios under different life-histories). If they were aiming to become practitioners in the field, Part 2 (Statistical analysis of sex ratio data) lays out many of the statistical procedures for dealing with binomial data.

Of particular relevance to ornithologists is the chapter by Cockburn, Legge, and Double on 'Sex ratios in birds and mammals'. It outlines the entire range of hypotheses that explain biased sex ratios in birds, and evaluates the status of each. For example, Fisher's original hypothesis that parents converge on an evolutionarily stable sex ratio, where the investment in males and females is approximately equal, is inherently problematic to study as measurement of the relative costs of sons and daughters is exceedingly difficult. In contrast, the influential Trivers–Willard hypothesis, which states that mothers in good condition should invest most heavily in the sex with the highest reproductive variance and hence highest potential returns, has probably been interpreted erroneously in many cases. For example, biased sex ratios amongst mothers in poor condition could equally result from one sex simply being more costly to rear. Cockburn *et al.* conclude that current theory may still be inadequate as some key empirical patterns are hard to explain, that more research is required on the mechanisms of sex allocation, and that researchers should resist the temptation to interpret short-term data too readily as data from multiple breeding seasons almost always reveals greater complexity.

Sex Ratios is primarily intended for behavioural and evolutionary ecologists, but because of its excellent overviews, summary boxes, and 'how to' sections is an ideal reference for any researcher in ornithology to have on the shelf. For those like myself who have been drawn further into this field (in my case via observations of massively skewed sex ratios in Eclectus Parrots), it is also a fascinating overview of the interactions and gradations between theoretical and empirical enquiry.

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OWLS OF THE WORLD: THEIR LIVES, BEHAVIOUR AND SURVIVAL

By James R. Duncan (one chapter by Bruce Marcot and David H. Johnson; numerous short essays by 21 other authors).

2003. Published by Key Porter Books, Toronto, Canada. Hardcover, 22 × 28 cm, 320 pp., several figures, numerous colour illustrations. ISBN 1-55263-214-8. \$A84.

After the *Handbook of the Birds of the World* volume on owls (del Hoyo *et al.* 1999) and a 'handbook'-style monograph on the world's owls (König *et al.* 1999), the approach of the present book is refreshingly different. *HBW 5* is a fully referenced compendium of knowledge on all the world's species, with comprehensive family as well as species accounts. The

book by König *et al.* is a somewhat less satisfying compendium, rather wanting for complete, accurate and current information and references on Australian species. The Duncan book is more a personalised and engaging account of what makes owls (and owl biologists) tick, owls in human culture, and the how and why of owl study. It also addresses conservation problems and solutions for owls, and concludes with a brief catalogue of the world's species.

Chapter 1, 'The nature of owls', describes in much detail the physical and ecological characteristics of owls, including plumage; eyes and vision; ears and hearing; foraging and digestion; behaviour; breeding strategies; classification; evolution; and biogeography. It concludes with contributions on the new DNA taxonomy; the discovery of a new owl species; and owl hybrids. It contains more detail on some aspects (e.g. owl eyes and vision) than is found in *HBW 5* and König *et al.*, although the section on fossils and evolution is superficial.

Chapter 2, 'Owls in mythology and culture' by Marcot and Johnson, is a fascinating ethnography of owls and owl lore in ancient history, tribal cultures, and recent Western culture. It also explores the etymology of the word for 'owl' in various languages. It concludes with the important message that conservation of owls, via their cultural profile and hence public sympathy, depends on an understanding of their cultural importance and how owl lore has changed over time.

Chapter 3, 'The study of owls', details the aspects of owl biology commonly studied, and how it is done, with appropriate caveats regarding the owls' welfare. It covers behaviour, population dynamics, dietary studies, banding, and longevity, with explanations, for instance, of what can be determined from banding, and how to calculate population parameters such as survival and longevity. It concludes with a sample of owl studies, in the form of narratives by the researchers: fledgling desertion by female Southern Boobooks; trapping Great Grey Owls for banding; Snowy Owl biology in arctic Russia; satellite tracking of migrant Snowy Owls; movements of *Asio* owls in Canada; and colour aberrations in owls. This chapter communicates well the potential for, and satisfaction from, adding to knowledge.

Chapter 4, 'Threats to owls', discusses the natural and human-related hazards faced by owls, including the new threat of global transport of disease. Most importantly, it discusses the recent trend towards community-based ('post-modern') conservation, in which self-interest rather than government regulation determines resource use, thus marginalising science-based conservation. Finally, it identifies ignorance of the biology and ecological requirements of owls, especially of rare species in the developing world, as a threat to effective conservation. It concludes with case studies on causes of owl mortality in Canada; the fate of wintering Burrowing Owls in Mexico; and owl ectoparasites.

Chapter 5, 'A world for owls', is introduced with a brief discussion of human conflicts over resource exploitation versus the environment. The bulk of the chapter is a sample of what people are doing for owls: involving the public, and especially children, in banding studies of owls; filming of owls; conservation solutions for owls in human landscapes; research on the Boreal Owl's year; restoring Barn Owl populations; and captive-breeding and release of offspring from crippled owls.

Chapter 6, 'Owls of the world, their global conservation status and general distribution', is a profile of each species. It is essentially a précis of *HBW 5* and König *et al.*, each entry covering in a paragraph the subject headings Description, Habitat, Natural History (habits, roosting, breeding, foraging, prey, home-range, voice), and Conservation Status (IUCN classification, population trends, threats). It draws attention to the Data Deficient species: those of tropical forest, particularly on islands, most in need of research and conservation action.

Throughout, the book is lavishly illustrated with colour photographs of owls and their behaviour, owl people doing research, and owl art, artefacts and symbols. It concludes with a list of contributors, a selected bibliography, a list of owl-related Web sites, and a common index of authors, subjects, English names and scientific names. Overall, the book is pitched at the intelligent layperson and potential owl biologist, and suggests avenues for further research.

For a global treatise, there is a strong Northern Hemisphere and especially North American bias, down to the cover photographs, which are all of North American species. Most of the contributors and their work are North American. Australian content concerns work by Jerry Olsen (an expatriate American and colleague of Duncan) on *Ninox*, and by John Penhallurick (University of Canberra) on the taxonomy of, primarily, genera of small owls of the Americas. Cutting-edge material from other parts of the world (e.g. in Newton *et al.* 2002) was largely missed.

There were very few typos, other than several generic names not italicised. However, there were some internal inconsistencies and other oddities in the text. For instance, we read that owls see 'better than cats' then, a bit later, a cat sees 'twice as well' as a Tawny Owl. *Ninox sumbaensis* is omitted from Chapter 6, where *N. rudolfi* is said to be the only *Ninox* on Sumba, yet an essay on the discovery of the former is in Chapter 1. Data on owls' binocular field of view and total field of view do not match with König *et al.* 'Phase' (implying a transitory plumage stage) is often used where 'morph' (a life-long plumage type) is meant. 'Concealment display' (meaning the cryptic 'stick' posture) is an oxymoron. A table is given of metric conversions to seven decimal places, and in the text imperial values are always given first with, parenthetically, their overly precise metric equivalent. Another Americanism, 'impacted' (as 'to have an impact on', not 'squashed'), grates as a verb.

The author admits to the book taking several years to complete, but it was not updated along the way. The DNA taxonomy is not adopted, although necessary generic changes were foreshadowed by König *et al.* and promoted by Wink and Heidrich (2000), and by Penhallurick in his essay in Chapter 1 of the Duncan book itself. African *Ptilopsis* are still called 'scops owls', although related instead to the 'eared' owls (*Asio*). *Ninox ios* of Sulawesi, described in 1999 in an American journal, is omitted from Chapter 6.

Global treatments tend to err on Australasian species unless vetted or contributed by a regional expert (as by Penny Olsen in *HBW 5*), and the present book is no exception. Chapter 6 has transposed the photographs of Sooty and Lesser Sooty Owls, and repeated the myth that the Masked Owl is the largest *Tyto* (the southern Sooty is). For the Lesser Masked Owl, the map incorrectly indicates the Sula Islands. The photo of the 'African Grass Owl' is of an Eastern Grass Owl, and the information on calls of the latter is poor, as is the photo (cropped face shot, which seems pointless). The map for the Moluccan Scops-Owl incorrectly indicates Biak and Yapen Islands. The Southern Boobook is separated from the Morepork of Tasmania and New Zealand, but some information specific to Australian Boobooks (e.g. arid mallee and mulga habitat) is extended to the Morepork. Information on the Norfolk Island birds is a decade old, though much has happened since. Even the photo of the 'Morepork' is of an Australian Boobook. In Chapter 1, *Ninox sumbaensis* should be called Little Sumba Hawk-Owl, as originally named by its discoverers, to distinguish it from the already established and preferable name Sumba Hawk-Owl for *Ninox rudolfi* (rather than Sumba Boobook, as it's not a boobook). Finally, under Papuan Hawk-Owl, Lae is on mainland New Guinea (to which the owl is restricted), not the 'north-eastern tip of the island of Malaita' (which is in the Solomons and oriented north-west to south-east).

The photographs vary in quality, from mostly excellent portraits and action shots to several shots of caged birds with scruffy plumage, damaged cere or overgrown mandibles, or photographers' 'seconds' offloaded to agencies. Good photos of rare forest owls of tropical Africa, Asia or Latin America, in the wild, are understandably difficult to obtain, but there are better photos around than some used, for instance, in Chapter 6 for holarctic or Australian species.

Many of the photos have been published previously, notably in *HBW 5*, and four are printed twice in the present book (not counting the covers). Several are misidentified, notably the 'fledgling Great Gray Owl' (p. 106), which is an adult Pel's Fishing-Owl; perhaps these are printer's mix-ups.

The somewhat dated bibliography has a strong North American bias and many anecdotal reports of albinism in owls, the latter biologically unimportant. Although listing other regional handbooks, it does not cite *HANZAB 4* (Higgins 1999). Australian citations are few, being mainly Jerry Olsen's work (partly from a North American conference proceedings edited by Duncan). One paper in Newton *et al.* (2002) is listed – a Canadian study that Duncan co-authored – but other important papers are not, and the volume is incorrectly cited.

Criticisms notwithstanding, this delightful book is an excellent reference for students needing just such a stimulus to launch an owl career, and it's a great read for amateur ornithologists. Although superfluous to the needs of professional owl researchers, the book contains much of interest to scientists. As Duncan says, we need new blood in owl research, education and conservation, greater investment in viable conservation solutions, and greater appreciation of owls through better understanding of them. This book will be a major catalyst. It is highly recommended, although for owl students in Australasia it will need supplementing with Newton *et al.* (2002) and ready access to *HANZAB 4*.

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