

REVIEW

The Systematics and Taxonomy of Australian Birds

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CSIRO Publishing, Melbourne. 2008. 227 pp.
Hardback - ISBN: 9780643065116 - AU \$69.95.
Paperback - ISBN: 9780643096028 - AU \$49.95

This well laid-out book by two of Australia's leading systematic ornithologists updates the inventory of avian species in Australia and its territories (which includes Christmas, Cocos (Keeling), Heard, Lord Howe, Macquarie and Norfolk Islands, the islands of Torres Strait and Ashmore Reef, as well as the Australian Antarctic Territories). This coverage is expanded from the 1994 "Taxonomy and Species of Birds of Australia and its Territories" to include Ashmore Reef and the Australian Antarctic Territories. Remarkably, the addition of the Australian Antarctic Territories (which are the largest territory of Antarctica claimed by any nation, and at over 6 million square kilometers are only slightly smaller than Australia itself) appears to only add a single vagrant record - Kerguelen Teal (also known as Eaton's Teal, *Anas eatoni*) to this list based on an immature specimen collected at Mawson Base (Johnstone & Irvine 2004). On the other hand, the addition of Ashmore Reef adds dozens of species and legitimises the reef's status as the Attu or Scilly Isles of Australia's twitching fraternity. However, the addition of a sand bar 130 kilometres from Indonesia yet more than 300 kilometres of the Australian continent does seem odd biogeographically, if not morally. Wouldn't it be great if the twitchers that spend so much effort trying to see a Pechura Pipit on Ashmore invested a tenth of that expense and time undertaking a survey on an uninhabited and probably never visited island in Indonesia (take your pick there are 17,500 to choose from and only a fraction have a published species list).

The format of the book is simple and logical. It has a short introduction that discusses taxonomic methods and species limits; this is followed by the species list arranged at the ordinal and family levels, along with common names. Twelve pages follow discussing the major avian issue of the day, namely the higher-level systematics of the birds.

This is an excellent summary of many perplexing problems that I recommend to all. The bulk of the book (about 150 pages) comprises a discussion and review of the systematics of each order from a species-level perspective and the book finishes with an extensive and useful assemblage of references.

In a review of the 1994 volume Joel Cracraft wrote "Given that this is a species list, one might expect the authors to adopt a particular species definition. They really don't do this. In the introduction they discuss the competing species concepts--biological versus phylogenetic--at some length, but make no operational decision about which they will apply". Little has changed in this volume yet I do not condemn the authors for the lack of rigor - they have done their best in an imperfect world. If we had complete mitochondrial and nucleic genomes for every species and a complete understanding of the morphology and osteology of every terminal taxa then, yes, defining a species concept (i.e., drawing a line in the sand and sticking by it) would be a great idea. But the world is not perfect and our knowledge of avian biology is incomplete. Molecular studies are often limited in scope and workers fail to make recommendations about species limits in otherwise excellent papers. Plus there are a lot of bad papers out there. Work is getting published that may be competent molecularly but is not grounded in ecological reality. Furthermore, we do not fully understand the speed of genetic divergence nor do we know which parts of a genome are important in indicating whether 2 taxa are different. Given this imperfection anyone trying to interpret the 'music of evolution' through the cacophony of ineptitude should be given a break!

What is such a list good for then? As an author of a similar work myself I consider that these lists are important parts of documenting a nation's biodiversity. They provide an inventory of a country's avian legacy and a framework for further effort. They are also an accessible "one-stop shop" which place a country's ornithological research within a global context. Checklists also provide a framework to closely examine the systematic position of the included species. Any good checklist should not be innovative. It should incorporate new taxonomic changes and be reliant on published data and arguments previously published. Whilst the authors attempt to fully justify any changes made to the original 1994 list, I will leave it to the reader to decide whether the authors have achieved their mandate of not being innovative. Nevertheless, there has been many changes in the 14 years since the earlier volume.

Higher-level Innovations

The treatment of orders in this volume will be surprising to those who sensibly avoid the arcane literature of systematics. The non-ratites (Neognathae) are treated as either Galloanseres (the ducks and Galliformes) or Neoaves (the rest) based on numerous studies in the last 10 years. The authors are, I believe, the first to use the “super-Orders” Metaves (pigeons, nightjars, swifts, grebes and flamingos) and Coronaves (the rest) in a checklist to define two major groupings in the Neoaves. This treatment was certainly supported by early DNA analysis (i.e., Fain & Houde 2004) but its adoption may have been premature as a recent paper (Hackett et al. 2008) failed to support it. Other innovations in this volume include the separation of tropic-birds into the separate order Phaethoniformes at the base of the Neoaves, the splitting of the Falconiformes (falcons) from the Accipitriformes (hawks), the lumping of the Pelecaniformes (pelicans and shags) with the Ciconiiformes (herons, etc.), and the placement of the Podicepiformes (grebes) with the Phoenicopteriformes (flamingos).

Species-level Innovations

Christmas Island

These changes emphasise the biogeographic separation of Christmas Island from the rest of Australia and thus questions the usefulness of national checklists which treat a few species as “Australian” whilst their nearest relatives are in Indonesia. At the species level, the Christmas Island hawk-owl has been recognized as a separate species from the Moluccan hawk-owl. Two species that breed on Christmas Island have been recognized as belonging to different species from their counterparts on the mainland: the Christmas Island taxon of *Collocalia*, formally recognized as a subspecies of glossy swiftlet *C. exculenta*, is now recognised as a sub-species of the Indonesian cave swift (*C. linchi*; referred to in this volume as Linchi swiftlet) and the Christmas Island taxon of *Accipiter*, formally recognized as a subspecies of brown goshawk *A. fasciatus*, is now recognized as a sub-species of the Indonesian variable goshawk (*A. hiogaster*).

Stirring the Australian soup

A few of the “splits” in this book are essentially a product of Schodde & Mason’s (1999) seminal work in “The Directory of Australian Birds: Passerines” combined with Christidis and colleagues ongoing DNA work, and are very much associated with the uniform use of a more phylogenetic species concept (note the use of a lower case here). These do not

affect us as New Zealanders and I will not dwell on them: the Kalkadoon grasswren is separated from the dusky grasswren; the short-tailed grasswren is separated from striated grasswren; the western wattlebird is separated from little wattlebird and the Arafura fantail is split from the rufous fantail; the Kimberley honeyeater is separated from white-lined honeyeater; the Pacific robin of South Pacific islands is split from the Australian mainland’s scarlet robin and the buff-sided robin is separated from white-browed robin.

Accepting overseas usages

Many species in this volume have changed classification due to schisms in the international status quo: eastern osprey *Pandion cristatus* has been separated from Eurasian osprey *P. haliaetus* and the Australian swiftlet *Aerodromus terraereginae* is separated from the south-western Pacific’s white-rumped swiftlet *A. spodiopygius*; the Austronesian pale-vented bush-hen *Amaurionis moluccana* is separated from the Philippine *A. olivacea*; the Austro-Pacific eastern grass owl *Tyto longimembris* is separated from the African grass owl *T. capensis*; the Australian logrunner *Orthonyx temmincki* is separated from the New Guinean *O. novaeguineae* and the Australasian figbird *Sphecotheres vieilloti* is separated from the extralimital *S. viridis* and *S. hypoleucus*. The pipits and wagtails receive rather interesting treatment, with the green-headed yellow wagtail *Motacilla taivana* separated from yellow wagtail *Motacilla tschutschensis* (now known as eastern yellow wagtail) whilst the black-backed wagtail (*Motacilla lugens*) is lumped back with white wagtail (*Motacilla alba*). This treatment is troubling as members of the *flava* group of yellow wagtails are known to have extensive hybridization yet are still treated as full species while the *Motacilla alba* group have been lumped based on the fact that they do interbreed. The inconsistent treatment of *Motacilla* is, however, not the fault of the authors of this volume but an issue systematists in the northern hemisphere must grapple with. All I ask for is consistency!

So what does this mean to New Zealanders?

As New Zealand’s nearest relative, Australia is the source of most of our vagrants. Many of these vagrants have altered their classification. The authors recognise the rare vagrant Australasian darter *Anhinga novaehollandiae* as separate from the old world darters *A. melanogaster* and *A. rufa*; they recognize the Australian little bittern *Ixobrychus dubia* (which has occurred once in New Zealand) as separate from the widespread little bittern *I.*

minutus; they recognize the eastern great egret *Egretta modesta* (that we rather unimaginatively call white heron) as separate from the widespread great egret *E. alba*; the authors believe there is enough evidence to separate Australian painted snipe *Rostratula australis* (a very rare vagrant) from the Afro-Asian *R. benghalensis*; based on recorded hybridisation they consider brown and south polar skua *Catharacta* to be in the same genus as the Jaegers *Stercorarius*; they consider eastern koel *Eudynamis orientalis* (that may have occurred once) to be different to Asian koel *E. scolopaceus*; the rare vagrant Oriental cuckoo *Cuculus optatus* is separated from the Himalayan cuckoo *C. saturatus*; the eastern barn owl *Tyto javanica* is separated from the Eurasian barn owl *Tyto alba* and the Australian reed-warbler *Acrocephalus australis* is separated from the clamorous reed-warbler *A. stentoreus*. In only splitting what they call Australasian pipit *Anthus novaeseelandia* (which includes *A. n. australis*) from Richard's Pipit *A. richardi* the authors show admirable restraint. Whilst most authors seem happy to accept a series of incomplete studies and call Australian pipit *Anthus australis* and New Zealand pipit *novaezeelandia* as different, these authors prefer to wait for this work to be completed. The treatment of the Australian member of New Zealand's *Cyanoramphus* parakeets is also worthy of notice. The authors separate the taxon *cookii* that once occurred on Lord Howe and still occurs on Norfolk Island as a full species, the Tasman parakeet, which they separate from the red-crowned parakeet *C. novaeseelandiae*. Following Schodde & Mason (1999) the Australian grey fantail *Rhipidura albiscapa* is separated from the New Zealand fantail *R. fuliginosa*. Birds on Lord Howe are considered to be the same species as those in New Zealand.

Controversial lumps and a new species!

Almost certainly the most controversial lumping of species in this volume, from a New Zealand point of view, is the merging of the Snares penguin *Eudyptes robustus* with Fiordland penguin *E. pachyrhynchus*. Christidis and Boles base this decision on the work of Baker *et al.* (2006) which I consider to be incomplete and deficient in information about the location

of samples. I believe the merger of these species to be premature as species limits in penguins are extremely contentious. Two more justifiable splits that the authors discuss but do not follow, are the mooted separation of northern New Zealand little penguin *Eudyptula iredalei* from the fairy penguin *E. minor* of southern New Zealand and Australia and the split of the three taxa of rockhopper penguin. Other lumps that some may decry, but that I am ambivalent about are the merging of Gould's bronze-cuckoo *Chalcites russatus* back with little bronze-cuckoo *C. minutillus* and lesser sooty owl *Tyto multipunctata* with sooty owl *T. tenebricosa*. The newly described species Vanuatu petrel *Pterodroma occulta* is recognized.

Conclusion

This is an Australian Checklist. Australians are infamous for their brevity and succinctness. I conclude therefore in an Australian manner: nice, useful, well written.

LITERATURE CITED

- Baker, A. J.; Pereira, S.L.; Haddrath, O.P.; Edge, K-A. 2006. Multiple gene evidence for expansion of extant penguins out of Antarctica due to global cooling. *Proceedings of the royal society of London, B* 273: 11-17.
- Cracraft, J. 1996. Review: the taxonomy and species of birds of Australia and its Territories. *Auk* 113: 973-974.
- Hackett, S.J.; Kimball, R.T.; Reddy, S.; Bowie, R.C; Braun, E.L.; Braun, M.J.; Chojnowski, J.L.; Cox, A.W.; Han, K-L.; Harshman, J.; Huddleston, C.J.; Marks, B.D. Miglia, K.J.; Moore, W.S. Sheldon, F.H. Steadman, D.W. Witt, C.C.; Yuri, T. 2008. A phylogenomic study of birds reveals their evolutionary history. *Science* 320: 1763.
- Fain, M.G.; Houde, P. 2004. Parallel radiations in the primary clades of birds. *Evolution* 58: 2558-2573.
- Johnstone, R.E.; Irvine, L.G. 2004. Description of an immature male Kerguelen pintail *Anas eatoni* collected at Mawson Station, eastern Antarctica. *Western Australian naturalist* 24: 164-168.
- Schodde, R.; Mason, I.J. 1999. *The directory of Australian birds: passerines*. CSIRO, Canberra

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