



Ostrich

Journal of African Ornithology

ISSN: 0030-6525 (Print) 1727-947X (Online) Journal homepage: <http://www.tandfonline.com/loi/tost20>

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To cite this article: Andrew E McKechnie & Arjun Amar (2018) Missing the bigger picture: a response to Beale (2018), *Ostrich*, 89:2, 151-152, DOI: [10.2989/00306525.2018.1467979](https://doi.org/10.2989/00306525.2018.1467979)

To link to this article: <https://doi.org/10.2989/00306525.2018.1467979>



Published online: 14 May 2018.



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Missing the bigger picture: a response to Beale (2018)

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Beale (2018) presents a review of trends and themes in African ornithology for the period 1990 to 2016. Whereas we agree this is a valuable topic to review, we have several concerns about his approach. Our concerns are related to (1) the analysis being based on only a very small subset of mostly taxon-specific literature, (2) the categorisation of research themes that overlooks important fields of ornithology, and (3) the patronising tone of this review of the work of an entire continent's ornithologists. As a consequence, we suggest it is likely that the quantity, quality and topics of research on birds emanating from this continent have been severely underestimated.

Beale's initial full-text search for the word 'Africa' and the common or scientific name of any bird species occurring on the continent was generated from PubMed®, a database focused on literature primarily covering the fields of biomedicine and health. Thus, many of the ~20 000 papers detected in this search describe studies focused on human and/or animal health rather than ornithology, a limitation that the author acknowledges. In addition, the results of this search would have included papers even if studies were conducted elsewhere but the word 'Africa' appears anywhere in the text, thereby overestimating the proportion of studies devoted to birds in Africa.

Recognising the very real shortcomings of using PubMed to quantify and describe ornithological research in Africa, Beale then opts to analyse abstracts from papers in journals in which he considers African ornithologists most likely to publish. These journals were *The Auk* (North American), *Emu* (Australasian), *Ibis* (British), *Ostrich* (African) and *African Journal of Ecology* (African). No explanation is offered why African ornithologists are more likely to publish in those journals than in, for instance, *Journal of Avian Biology*, *Journal of Ornithology*, *The Condor*, or perhaps most importantly, any non-taxon-focused journal other than *African Journal of Ecology*. This approach considerably underestimates the outputs of African ornithologists, and biases any conclusions reached on the state of African ornithology. For example,

a Web of Science™ (All Databases) search for the period 1990 to 2016 reveals that, by restricting the analysis to just these five journals, Beale included only 250 of 1 530 papers from South Africa's FitzPatrick Institute of African Ornithology and 33 of 124 papers from Nigeria's AP Leventis Ornithological Research Institute. Thus, his analysis considered just 16% and 27%, respectively, of the total outputs from these two major African ornithological institutions. This severely restricted sample of literature forms the basis for a list of authors with seven or more papers on African birds (Figure 5b in Beale 2018). Many individuals who have made major contributions to African ornithology during the period 1990–2016 are conspicuously absent, just a few of which are Claire N Spottiswoode, who published approximately 55 papers dealing wholly or partly with African taxa, Susan W Nicolson (~50 papers), Amanda R Ridley (~44 papers) and Munir Virani (~22 papers) (data from Web of Science). The cursory nature of Beale's literature review also explains how a researcher such as Rauri CK Bowie, who published ~80 papers on the phylogenetics and biogeography of African birds, only just attains the seven-papers-or-more threshold for inclusion in Beale's word cloud of prolific authors.

Our second concern is that Beale's analysis is based on a thematic pigeonholing approach at odds with the integrative nature of 21st-century biology. The themes listed in Beale's Table 1 overlook major areas of ornithology such as behavioural ecology and evolutionary physiology. We also note the complete absence of explicitly evolutionary themes in the analysis, which also leads to a severe underestimation of the contributions of workers such as Rauri Bowie. In addition to several major areas of ornithology being overlooked, the small number and simplistic nature of search terms for each theme (e.g. 'physio', 'blood', 'heart' and 'liver' for papers on physiological topics) suggests to us that several fields of ornithology have not been representatively sampled, and hence underestimated in the analysis.

Related to the above issues, by focusing on the same five journals for the entire period under review, Beale

has implicitly assumed that publication patterns have remained unchanged over nearly three decades. In reality, our impression is that work on African birds is increasingly being published in journals with higher impact factors and/or with a non-taxon-specific focus. A cursory examination of papers emanating from the FitzPatrick Institute supports this contention. During the first 10 years (1990–1999) of the period Beale considered, four of the top five journals in terms of percentage of papers were African, versus just two of the top five between 2007 and 2016 (data from Web of Science).

Our last concern – although we are sure Beale never intended this – is the patronising tone of his review. We find ourselves wondering whether the author would have considered conducting a comparable review of ornithology for another continent, or predicting the journals in which its ornithologists are most likely to publish their work. Would editors and reviewers deem it acceptable if an author reviewed the current state of European ornithology by reviewing the literature published in *Ibis*, *The Auk*, *Bird Study*, *Ornis Fennica* and *European Journal of Ecology*? We doubt it very much, yet this approach has apparently sufficed here for ornithology in Africa. In a similar vein, Beale's calls for 'overseas' researchers to assist and mentor African scientists are meant well, but this kind of language perpetuates the notion that the scientific community of an entire continent needs help from outside actors to keep up with the rest of the world.

Notwithstanding the concerns outlined above, Beale's analysis highlights some valuable points with which we agree. One is the uneven distributions across African countries of publications, training and research capacity, which are indeed heavily skewed towards South Africa


and institutions beyond the continent. Ornithology in many African countries could indeed benefit from capacity-building initiatives; in this regard, it is encouraging to see the emergence of initiatives such as the Global Young Academy's African Science Leadership Program (<https://globalyoungacademy.net/activities/african-science-leadership-programme/>), aimed at building capacity for young scientists and scholars across the continent.

Ornithologists working in African countries should be extremely proud of their contributions to the global scientific endeavour. In 2017, for instance, the University of Cape Town was ranked third for ornithology globally by the Centre for World University Rankings (<http://cwur.org/2017/subjects.php#Ornithology>). That there are significant challenges facing ornithology in many African countries, however, is also beyond dispute. But by considering only a small, thematically restricted subset of ornithological literature emanating from Africa, Beale has painted a picture of ornithology on this continent that does not even come close to being a true reflection of reality.

Acknowledgements — We thank Mark Brigham, Steven Redpath and Sue Nicolson for commenting on a draft of this manuscript.

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