FRANCOLIN AND SPURFOWL TAXONOMY **REVISITED**

In the March/April 2020 issue of *African Birdlife*, you published an article by Rob Little titled 'Elevating Gamebirds: New francolin and spurfowl taxonomy'. This article was based entirely on research by a team from the FitzPatrick Institute of African Ornithology and the University of California that resulted in two papers published in *Ostrich* in 2019. These examined the taxonomy of all Afrotropical francolins and spurfowl and proposed significant changes at the species level: two additional species of spurfowl and no fewer than 14 new species of francolin (Mandiwana-Neudani et al. 2019a & 2019b).

It is now two years since the publication of these papers in *Ostrich* and the recommendations as set out by Little in your article have not been widely adopted by the scientific community. None of the four major world lists has elevated any taxa to species level as a result of the team's research, and the new edition of *Birds of East Africa* (Stevenson & Fanshawe 2020) maintains a more traditional approach, accepting some generic changes but only two elevated species (both influenced by independent research). On the other hand, the latest edition of *SASOL Birds of Southern Africa* (Sinclair et al. 2020) does include the three new proposed species that occur in southern Africa (the others are all found in eastern and central Africa).

We critically reviewed the two *Ostrich* papers and found key deficiencies in the methodology employed and inadequate explanations for most of the proposed taxonomic changes. There are also many factual errors in both papers pertaining to the text and distribution maps; these are detailed in our response, which has now been published online by *Ostrich* (Hunter et al. 2021). For all these reasons, we believe that it is premature to recognise so many extra new species at this time. Further robust work will need to be done before most of these taxonomic changes are widely supported.

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IN **RESPONSE...**

Afro-Asiatic francolins, spurfowls and other partridge-like phasianid gamebirds have had complex taxonomic histories, exacerbated by the inconsistent use of common names. Historically, 11 genera, 62 species and 163 subspecies were proposed. In 1963 Mrs BP (Pat) Hall dealt with this 'chaos' decisively, recognising 41 species and fewer than 100 subspecies, lumping them into two major assemblages within the single genus *Francolinus* and proposing that they should all bear the common name 'francolin'.

Hall's taxonomy went unchallenged until Crowe et al. (2006) published peer-reviewed and combined anatomical, vocalisation, ecological and DNA evidence that demonstrated that her assemblages form two distantly related groups: spurfowls and 'true' francolins. The spurfowl are more closely related to Old World quails (*Coturnix* spp.) and the francolins to junglefowl (*Gallus* spp.). Remarkably, our team also demonstrated (Cohen et al. 2012) that Nahan's 'Francolin' is not even a phasianid! Its closest African relative is the enigmatic Stone Partridge *Ptilopachus petrosus* and both are related to the American 'quails', Odontophoridae. More recently, we revised francolin and spurfowl subspecies/species boundaries in two peer-reviewed monographs (Mandiwana-Neudani et al. 2019a and 2019b). Rob Little's article in the March/April 2020 issue of *African Birdlife* explained these changes.

These new phylogenetic and taxonomic findings have not been formally disputed scientifically. However, some of the subspecies-to-species upgrades are criticised in an opinion piece published in *Ostrich* (Hunter et al. 2021). We rebutted their objections point for point (Mandiwana-Neudani et al. 2021) and direct readers to the two pieces for fuller discussion.

In their letter above, Hunter and his colleagues reiterate some of the comments from their original piece. They imply that our taxonomic recommendations have been rejected by 'the four major world list' committees and state that the new edition of *Birds of East Africa* (Stevenson, Fanshawe 2020) accepts 'only two elevated species'. In fact, the International Ornithological Congress World Bird List v11.1 (Gill et al. 2021) has implemented many of our recommendations with regard to spurfowls and has taken cognisance of the balance 'pending further examination', which we are supplying. The relevant IOC committee has yet to review our recommendations for francolins.

They also purport 'key deficiencies in the methodology employed', 'inadequate explanations for most of >

the proposed taxonomic changes' and 'many factual errors' relating to the text and distribution maps. In their article in *Ostrich* they raise 'doubts about the methodology employed', claiming that our taxonomic methodology follows an 'organismal' approach that seems to concentrate on a pattern-based species concept, using a pattern partitioning and score allocation system.

In fact, we employed an Integrative Taxonomy Framework (ITF; Crowe et al. 1994, Sangster 2018, Cicero et al. 2021) in which species delineation is determined by corroboration among population-level, geographically congruent, multiple lines of evidence from, for example, anatomy, behaviour, calls, DNA and ecology. The ITF tends to recognise more species than the Biological Species Concept (Mayr 1942) that requires reproductive isolation between species. The ITF is also more effective at objectively discovering Evolutionarily Significant Units (DeWeerdt 2002), which are essential for the effective conservation of biodiversity. All the 'elevated' francolin/spurfowl subspecies are, at least, anatomically diagnosable and differ markedly in DNA divergence. Regarding distribution maps, new and improved maps are included in *Gamebirds of Africa* (Little 2021).

Hunter and his colleagues say that it is 'premature to recognise so many extra new species' and 'further robust work will need to be done before most of these taxonomic changes are widely supported'. With regard to 'premature', it has been nearly 60 years since Pat Hall revolutionised 'francolin' taxonomy. How much longer must we wait to reassess her findings? Rauri Bowie is currently sampling across the genomes of 500 guineafowl and African phasianid taxa that will further help to clarify species boundaries and unravel how these birds diversified across the African landscape. We once again invite Hunter and his colleagues to help provide the material necessary to do this and further refine range maps.

Summarily dismissing research on species supported by multiple lines of evidence and published in peer-reviewed scientific journals impedes rather than advances our understanding of these wonderful gamebirds, many of which warrant urgent conservation attention.

TIM CROWE, ROB LITTLE, TSHIFHIWA MANDIWANA-NEUDANI AND RAURI BOWIE

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