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Further on subspeciation in the Red-billed Francolin *Pternistis adspersus* (Waterhouse), 1838

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The Red-billed Francolin is an endemic species of the northern aspects of the South West Arid Zone of the Afrotropics, which ranges from central and northern Namibia (south as far as *c.* 27°S) and southwestern Angola, east to the mid-Zambezi R. drainage in southwestern Zambia and northwestern Zimbabwe, being replaced to its immediate east by a closely allied congener in the form of the Natal Francolin, and to the south of its range in the west by the larger Cape Francolin. In their recent major revisionary study of the francolins, Crowe *et al.* (1992) group these three so-called partridge-francolins, following the generic recommendations of both Hall (1963) and Wolters (1976), along with a fourth species (Hildebrandt's Francolin), in the new subgenus *Notocolinus* in the resurrected genus *Pternistis* Wagler, 1832, the types of both being the Cape Francolin *Tetrao capensis* Gmelin, 1789. Crowe (1993) validated the introduction of the name *Notocolinus*, thereby becoming its sole author, as well as of three other subgenera of

francolins proposed at the same time. It is worthwhile noting that as far back as 1934 *Peters*, in his *Check-List*, recognised the desirability of separating *Pternistis* from *Francolinus* Stephens, 1819, but inadvertently left its type-species four-square in the latter genus. *Francolinus* has as its genotype *Tetrao francolinus*=*Francolinus francolinus* (Linnaeus), a polytypic species of the southwestern Palaearctic and the Indian Sub-Region.

The Red-billed Francolin *Pternistis adspersus* was made known to science on the basis of material collected during General Sir J. E. Alexander's 1830s expedition into the interior of what is now the territory of Namibia, and was described in the ensuing report on the findings of the expedition prepared by G. R. Waterhouse (1810–1888) of the British Museum. Macdonald (1951) studied the type-specimens of birds collected during the course of Alexander's journey into the Namibian hinterland, designating the upper Kuiseb R. area of the inner edge of the Namib Desert as the restricted type-locality of *P. adspersus*.

This francolin was first shown to exhibit a measure of geographical variation by the American specialist R. Meyer de Schauensee (1931), when he proposed the Lake Ngami, northwestern Botswana, population as a new subspecies (*P. a. kalahari*) on both colour and mensural characters. Most later workers have expressed doubt in the validity of *kalahari* and treat *adspersus* as monotypic. However, in a recent revision of the case on the basis of the bulk of material in southern African collections, Clancey (1992) confirmed the polytypy of the species, seeing it as comprising two subspecific groups of populations, employing for them the two names available, *adspersus* (1838) and *kalahari* (1931).

As one frequently finds, the nomenclatural legacy of the past is often a major obstacle to the effective taxonomic treatment in modern terms of the variation of polytypic species. This problem forcibly presents itself here, in that both available names are based on desertic populations and are effectively synonymous. Research for my 1992 paper established that elements of nominate *adspersus* extended south along the inner edge of the Namib Desert certainly as far as the Tropic, lying contiguously to the immediate west of a mesic darker and larger population centred on the Waterberg, a major biogeographical feature present on the northern plateau in the Namibian highlands at 20°28′S, 17°13′E. The Waterberg population is in effect an isolate. The precise southern limit of Namib edge birds is uncertain through a lack of comparative material, though the species is recorded as far as 27°S near Seeheim on the Great Fish R. In the north of Namibia the species extends numerously through Ovamboland (Owambo) (Brown 1993) and the Etosha Pan region to the mid-Okavango R. drainage, Ngamiland and the arid part of northeastern Botswana to north of the Makgadikgadi Salt Pan, where it meets darker elements of the species (herein treated as part of *P. a. mesicus*, following Clancey 1992), and *P. natalensis*.

In the topotypical specimens of nominate *adspersus* examined, from the Windhoek district and localities to the west, as well as from Omaruru and Okahandja to the immediate north, the wings in adult males measured 180–188, abruptly shorter than in the darker

Waterberg population with wings in adult males 191–201, in sub-adults 178–188 mm (see Table 1 in Clancey 1992). Of significance is that the size difference in the Waterberg birds is more strongly marked in sub-adult than in adult birds, the co-efficient of difference being, respectively 1.42 (n=9) for sub-adult males and 1.27 (n=11) for adults.

Topotypical elements of *adspersus* agree taxonomically in both size and colouration with comparable material of *kalahari* from Maun and the Thamalakane R. in the Okavango region of northern Botswana. This has the result that *P. a. adspersus* (with *kalahari* as a synonym) is applicable to the desertic aggregate of populations, and there is a need to introduce a new name for both western and eastern mesic representatives of the species.

Pternistis adspersus mesicus subsp. nov.

Type. ♂ adult. Waterberg, Otjiwarongo district, Namibia, at 20°28′S, 17°13′E, 11 May 1968. Collected by P. J. Buys. In the ornithological collection of the State Museum of Namibia, Windhoek, Reg. No. 194.005.

Description. Compared with nominate *P. adspersus* as herein interpreted, slightly darker sepia over the upper-parts and wings with narrower white streaking over the hind-neck and upper mantle, and with more extensive black over the lores and distal orbital surfaces. Face and venter with entire forethroat and breast duskier as a result of the more compact reticulation of the darker greyish-brown scaling and duller, less whitish, ground colour. In neatly prepared specimens, the downy belly feathering is appreciably darker and greyer, less buffy white, than in arid country birds. Size in topotypical examples from the Waterberg larger, with wings of ♂♂ 191–201 (195.0) mm, s.d. 4.26, n=11; adult ♀♀ 170–177.5 (173.3) mm, s.d. 1.91, n=9. In the mid-Zambezi R. drainage population agreeing with the Waterberg one in colour adult males have wings 182–190 (186.1), s.d. 3.02, n=7; adult females 174–180 (175.5), n=4. Note: Zambezi specimens agree in size with nominate *adspersus* and not with their Namibian affiliate, dry country *adspersus* having wings of adult ♂♂ 178–190 (183.2), s.d. 5.41, n=8; adult ♀♀ 170–177 (173.5), s.d. 2.25, n=6.

Measurements of the type. Wing 193, culmen from cere 22.5, tarsus 50, tail 90.5 mm. In moderately fresh dress.

Material examined. North-central highlands of Namibia, including the Waterberg, 20; mid-Zambezi R. (Kazungula, at 17°50′S, 25°16′E) 11. *P. a. adspersus*, 50.

Range. Distributed in two widely separated populations from the Waterberg and immediately adjacent parts of the north-central highlands of Namibia, with a taxonomically related population in the mid-Zambezi catchment in northwestern Zimbabwe to the immediate west of the Victoria Falls, the eastern Caprivi Strip on the Chobe R., and southwestern Zambia in association with flood-plains north on the Zambezi R. to Kalabo at 15°S, with rainfall *c.* 600 mm p.a. In northwestern Zimbabwe present sympatrically with the Natal Francolin *P. n. thamnobium* to 20°S and 27°E.

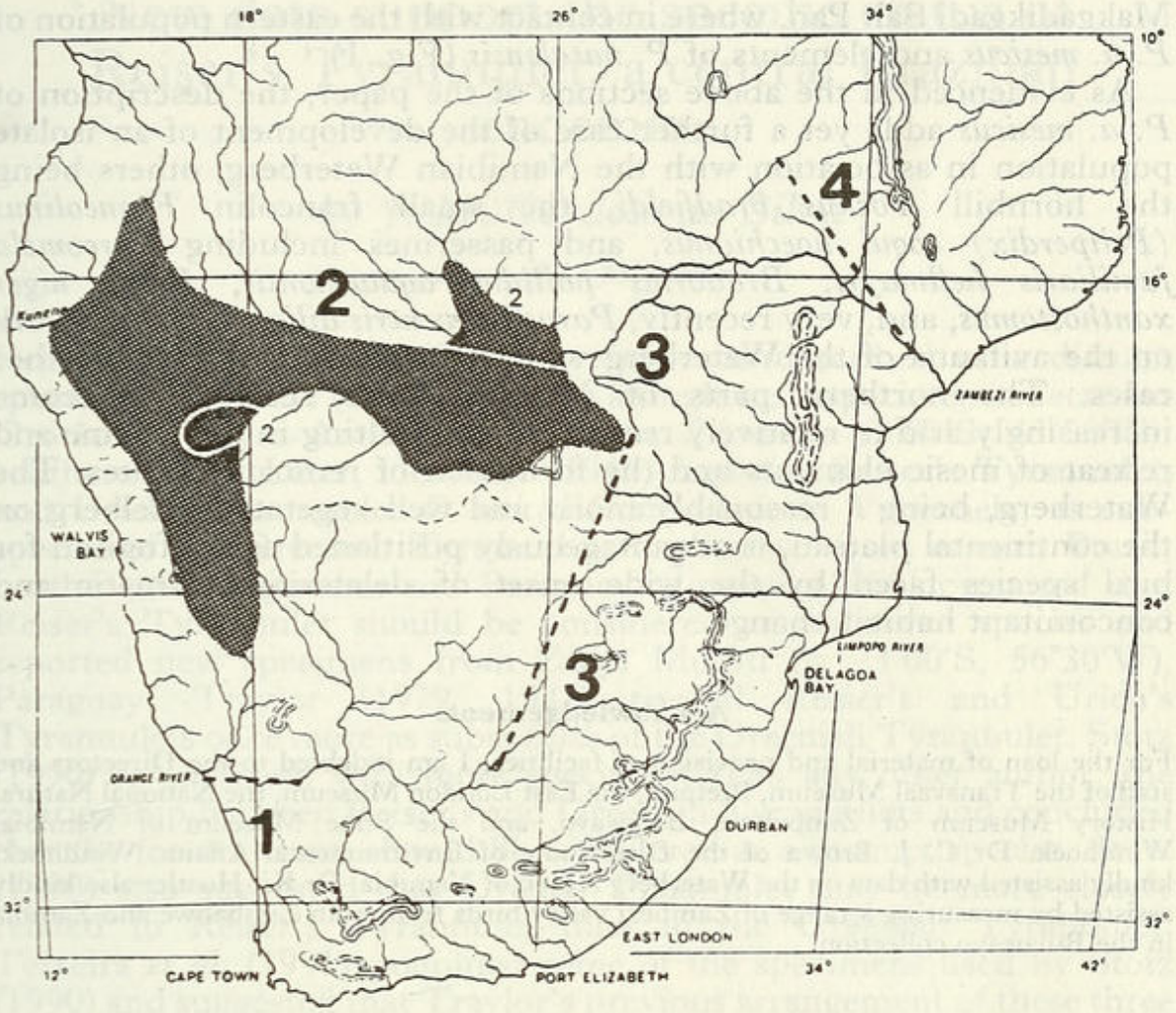

Figure 1. The "Partridge-Francolin" complex (Genus *Pternistis:* Sub-genus *Notocolinus)* of the Southern African Sub-Region, featuring the Red-billed Francolin *P. adspersus*. 1. *Pternistis capensis*; 2. *Pternistis adspersus adspersus* (shaded, unnumbered); *Pternistis adspersus mesicus* (shaded, segments numbered small 2); 3. *Pternistis natalensis* subspp.; 4. *Pternistis hildebrandti* subspp.

Etymology. *Mesicus* from Greek and modern ecology, affecting habitats enjoying a moderate level of precipitation.

Remarks. Re-examination of the variation occurring in the francolin *Pternistis adspersus* confirms that the available names were both initially given to desertic populations and are effectively synonymous, necessitating the need for a name for the birds affecting moister environments. Variation in colour correlates with occurrence in either arid or more mesic country, and size increase in the west with presence in moist highlands, resulting in *P. a. mesicus* being polytopic.

As an outcome of the present study, the range of nominate *P. adspersus*, with *kalahari* as a synonym, will be from southwestern Angola in Mossamedes and Cunene, and the Kaokoveld of northwestern Namibia, south along the eastern verge of the Namib Desert to *c.* 27°S on the Great Fish R., east through Owambo (Ovamboland) and the Etosha Pan region in arid country to western Caprivi, Ngamiland, and Botswana north of the Botletle R. and

Makgadikgadi Salt Pan, where in contact with the eastern population of *P. a. mesicus* and elements of *P. natalensis* (Fig. 1).

As evidenced in the above sections of the paper, the description of *P. a. mesicus* adds yet a further case of the development of an isolate population in association with the Namibian Waterberg, others being the hornbill *Tockus bradfieldi*, the small francolin *Francolinus (Peliperdix) coqui hoechianus*, and passerines including *Cercomela familiaris hellmayri*, *Bradornis pallidus aquaemontis*, *Parus niger xanthostomus*, and, very recently, *Parus rufiventris diligens*. Future work on the avifauna of the Waterberg will undoubtedly reveal yet further cases. The northern parts of Namibia have seemingly become increasingly arid in relatively recent times, resulting in the decline and retreat of mesic elements and the formation of remnant isolates. The Waterberg, being a reasonably moist and well vegetated inselberg on the continental plateau, is advantageously positioned as a refugium for bird species faced by the wide onset of deleterious climatic and concomitant habitat change.

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