

## Comments on the taxonomy and evolutionary relationships of some East African ‘Red-winged’ francolins currently recognized as *Scleroptila g. gutturalis/lorti/archeri*, *Scleroptila s. shelleyi* and *S. s. uluensis*

The taxonomy and phylogenetic (evolutionary genealogical) relationships of East African members of Hall’s (1963) taxonomically un-designated ‘Red-winged Group’ of *Francolinus* spp. *sensu lato* have complex taxonomic and phylogenetic histories. All three of the forms investigated here were described originally as members of the phasianid genus *Francolinus* (Stephens, 1819), but Crowe *et al.* (1992) provide morpho-molecular evidence supporting splitting them and the Ring-necked Francolin (*streptophora* – Ogilvie-Grant, 1891) off into *Scleroptila* (Blyth, 1852). Hall (1963: p. 153) describes her ‘red-wings’ as sexually monomorphic, medium-sized perdicines that have “quail-type” patterned upperparts with a lattice-work pattern of irregular white and buff bars and shaft streaks on a basic colour of mixed black, brown, grey and chestnut. They have variable amounts of rufous in the wings, marked facial patterning, black bills (usually with a yellowish base) and yellowish legs, spurred in the males.

### *Distribution, habitat and morphology*

Based on species accounts in Hall (1963), Mandiwana-Neudani *et al.* (2019) and Little (2021), the northern forms of *Scleroptila gutturalis* inhabit insular blocks and smaller fragments that straddle the highlands of Eritrea, northern Somalia, Ethiopia and South Sudan, south to northeastern Uganda at Kidepo National Park and Mt Moroto, and the Huri Hills in northern Kenya. It inhabits blocks and fragments of sparse grassland in arid acacia steppe on rocky hillsides and mountains from 600 to 2100 m. It differs from other ‘red-winged’ francolins in having a buff throat-patch with ill-defined dark freckles (*gutturalis*) above a well-defined necklace with the abdomen marked with black streaks on the feather centres and flanks broadly streaked with chestnut. Throughout its range, there is marked variation in overall plumage colour characterized by grey and rufous populations. The greyest forms (*lorti*) occur in northern Somalia and eastern Ethiopia and a mosaic of rufous and greyish micro-populations (*archeri*, including *friedmanni* and *stantoni*) in southern Ethiopia, South Sudan, north-eastern Uganda and northern Kenya.

Shelley’s Francolin *Scleroptila s. shelleyi* has a patchy range from south-eastern Rwanda, western and southern Tanzania south to southeastern, eastern Democratic Republic of Congo, Zambia, northern Malawi, Zimbabwe, Mozambique, Eswatini (formerly Swaziland) and South Africa. It inhabits moist, rocky hillsides in miombo and mopane woodlands below 2000 m. It has a buff to white throat-patch above a distinct black necklace, a breast blotched and mottled with maroon, chestnut and grey and a white abdomen irregularly broadly spotted and barred black.

*Scleroptila s. uluensis* ranges from central and southern Kenya south to northern Tanzania in the Mbulu and Crater Highlands, Arusha and Tarangire National Parks. It inhabits acacia grasslands from 1500 to 2000 m. It is similar to nominate *shelleyi*, but the necklace and throat-patch are somewhat less distinct and the bill markedly shorter. Some specimens have the throat moderately freckled with black like *Scleroptila gutturalis*.

*Pre-1963 taxonomy*

Peters (1934) recognized five species and 21 subspecies of 'Red-winged' Francolins:

1. *africanus* (Stephens, 1819): *africanus*, *gutturalis* (Rüppell, 1835), *eritreae* (Zedlitz, 1910), *lorti* (Sharpe, 1897), *psilolaemus* (Gray, 1867), *ellenbecki* (Erlanger, 1905), *archeri* (Sclater, 1927) and *uluensis* (Ogilvie-Grant, 1892).
2. *shelleyi* (Ogilvie-Grant, 1890): *shelleyi*, *elgonensis* (Ogilvie-Grant, 1891), *trothae* (Reichenow, 1901), *whytei* (Neumann, 1908).
3. *levaillantii* (Valenciennes, 1825): *levaillantii*, *kikuyuensis* (Ogilvie-Grant, 1897), *crawshayi* (Ogilvie-Grant, 1896), *benguellensis* (Neumann, 1908).
4. *finschi* (Bocage, 1881).
5. *garipeensis* (A. Smith, 1843) superseded by *levalliantoides* (A. Smith, 1836): *levalliantoides*, *jugularis* (Büttikofer, 1889), *pallidior* (Neumann, 1908), *langi* Roberts, 1932, *ludwigi* (Neumann, 1920).

Mackworth-Praed & Grant (1952, 1962) recognized five species and 26 subspecies:

1. *afer* = *afra* (Latham, 1790): *afer*, *uluensis*, *psilolemus*, *ellenbecki*, *gutturalis*, *lorti*, *archeri*, *friedmanni* (Grant & Mackworth-Praed 1934), *macarthuri* (Van Someren 1938) and *stantoni* (Cave 1940).
2. *shelleyi*: *shelleyi*, *whytei*, *elgonensis* and *theresae* (Meinertzhagen 1937).
3. *levalliantoides*: *levalliantoides*, *kalaharica* (Roberts 1932), *pallidior*, *langi* (Roberts, 1932), *wattii* (Macdonald 1953), *jugularis* (Buttikofer, 1889) and *cunenensis* (Roberts, 1932).
4. *levaillantii*: *levaillantii*, *kikuyuensis*, *crawshayi*, *benguellensis* and *clay* (White, 1944).
5. *finschi* (Bocage, 1881).

Mackworth-Praed & Grant correctly regarded '*afra*' as the senior name of the South African Grey-wing Francolin, generally known as *Francolinus africanus* (Stephens, 1819). However, when *Pternistis* spurfowls were submerged within *Francolinus*, *Perdix afra* Latham, 1790 is pre-occupied by *Tetrao afer* (S. Muller, 1776), the senior name for the bare-throated spurfowl known as *P. afer*. Thus, the South African Grey-winged Francolin must therefore bear the specific epithet *afra*.

In her highly influential monograph, Hall (1963: 153) disagreed with previous classifications of 'red-winged' francolins, which she felt placed "too great a reliance on minor morphological characters, particularly the size of the bill, without regard to the ecology of the forms of (*sic*) their likely evolution". Her markedly different taxonomy recognized six species and 18 subspecies:

1. **The Montane Redwing** *Francolinus psilolaemus* (Gray 1867) including all other montane forms from Kenya, Uganda and Ethiopia: *psilolaemus*, *ellenbecki*, *elgonensis* and *theresae*. All of these taxa are found in heath and grasslands above 2450m, have a high proportion of rich chestnut in the wings and differ from other red-winged francolins in having some barring on the tips of the primaries. The underparts are rich buff mottled with chestnut with some dark brown or black markings.
2. **Shelley's Redwing** *Francolinus shelleyi* (Ogilvie-Grant, 1890) occurs at lower elevations than *psilolaemus* and includes nominate *shelleyi* and *F. s. whytei* (Neumann 1908) and *uluensis* (Ogilvie-Grant 1892) (including *macarthuri* (Van Someren 1938). These taxa differ from *psilolaemus* in having the breast

maroon, chestnut and grey, and have no black below the necklace and gorget that is moderately developed and blotched with reddish-chestnut. The remainder of the underparts are patterned with black and white.

3. **The Greywing** *F. africanus* (= *F. afer*) differs from other 'redwings' in having a white throat bordered with black freckling and much reduced rufous in the wings. The black barring on the buffy abdomen is narrow, whereas the barring on the underparts of some other 'red-wing' taxa is broad.
4. **Acacia Redwing** *F. levaillantoides* (A. Smith, 1836) comprising what Mackworth-Praed & Grant (1952) recognized as the northern forms of the Grey-wing (*gutturalis*, *archeri*, *lorti*, *stantoni* and *friedmanni*), and four southern African taxa (*levaillantoides*, *kalaharica*, *pallidior* and *jugularis*), all of which have only very limited amounts of chestnut in the wings.
5. **Levaillant's Redwing** *F.l. levaillantii*, *F.l. crawshayi* and *F.l. kikuyuensis*, which differ from other 'red-wings' in having an ochre collar and the sides of face and edges of the throat ochre inside the black-and-white facial pattern.
6. **Finsch's Redwing** *F. finschi* differs from other 'red-wings' in lacking the black-and-white patterning on the face and neck and having a grey breast.

#### Post-1963 taxonomy

White (1965) largely followed Hall, placing *uluensis* (including *macarthurii*) within *F. shelleyi*, and *gutturalis*, *archeri* and *lorti* within *F. levaillantoides*. Later, Snow (1978) commented that within Shelley's Francolin *Francolinus shelleyi* there was marked geographical variation, with two forms worthy of recognition: the small-billed northern 'acacia' bird (*F. africanus uluensis*) and the long-billed southern 'miombo and mopane' bird (*F. s. shelleyi*).

For East Africa, both Britton (1980) and Zimmerman *et al.* (1996) recognized Smith's Francolin (*Francolinus levaillantoides archeri*), Moorland Francolin (*F. psilolaemus elgonensis* and *F. p. theresae*) and Shelley's Francolin (*F. s. shelleyi*, *F. s. uluensis* and *F. s. macarthurii*).

Meanwhile, the current IOC World Bird List Version 12.1 (Gill *et al.* 2022) recognizes *Scleroptila gutturalis* as a widely distributed, polytypic species with two highly disjunctly distributed clusters of three subspecies in northeastern Africa [*gutturalis* (Rüppell, 1835), *lorti* (Sharpe, 1897), *archeri* (Sclater, 1927)] and southern Africa [*levaillantoides* (A. Smith, 1836), *jugularis* (Büttikofer, 1889) and *pallidior* (Neumann, 1908)]. It treats *uluensis* (Ogilvie-Grant, 1892) as a northern subspecies of *Scleroptila shelleyi* (Ogilvie-Grant, 1890).

Over the years, all forms of Hall's 'Acacia Redwing' have often been erroneously referred to as *Francolinus levaillantoides*, but the mis-spelled species epithet was corrected to *levaillantoides* as originally spelt by Smith (1836). Meanwhile the name *gutturalis* for all northern birds has date priority over *levaillantoides* Smith. As a result, birds from southern Ethiopia, northern Kenya and northeastern Uganda are now referred to as Archer's Francolin *Scleroptila gutturalis archeri* (Turner & Pearson 2015).

#### Advertisement calls

With regard to variation in advertisement calls within *Scleroptila* spp., Mandiwana *et al.* (2014) separated the calls of the component taxa into two qualitatively distinct subgroups:

1. species with short, four-element *Ki-Keet*, *ki-KIT* ('I'll drink YER-BEER') strophes (*finschi*, *levaillantoides*, *gutturalis* and *shelleyi*).

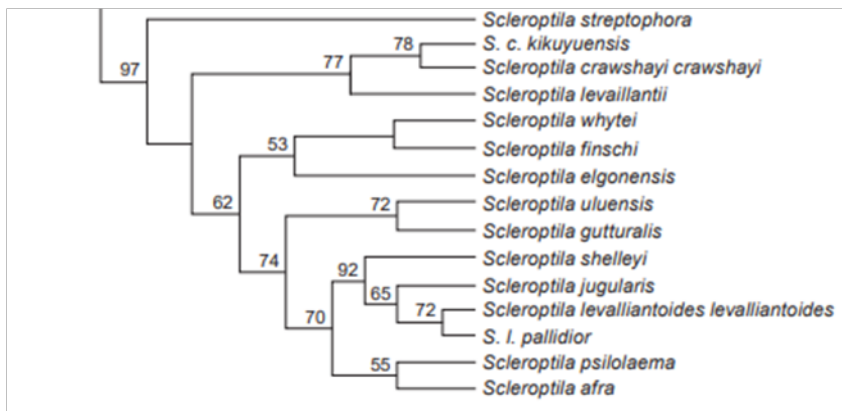
- those species with long strophes consisting of many more elements (*streptophora*, *levallantii* and *afra*), often ending with a warble.

Interspecific differences in the four-element calls differ primarily in strophe and pause duration. The strophe of *S. levalliantoides* (0.53 s) is the shortest, with those of *S. finschi* (0.71 s), *S. gutturalis* (0.79 s), and *S. shelleyi*, (0.89 s), respectively, increasing in duration. The remaining three species have strophes of much longer duration, (*S. afra*, 2.0 s; *S. levallantii*, 2.11 s; *S. streptophora*, 2.22 s) and seven to ten elements. The typical advertisement strophes of *S. levalliantoides*, *S. gutturalis*, *S. finschi* and *S. shelleyi* are similar in that they have four complex elements with the first two elements introducing the strophes.

Pearson & Coverdale (1991) felt that *archeri* in the Huri Hills of northern Kenya, were vocally very similar to *shelleyi*, and Zimmerman *et al.* (1996) noted that their repetitive “Ki-Keet, ki-KIT” four-note call was “faster, more strident and higher-pitched than that of *F. shelleyi uluensis*” which they described as a four-note “ski-UK skiki-eu or ker-kiRRr, ker-kek, repeated several times”.

#### A ‘holistic’ evolutionary approach

Based on combined morphological, behavioural and DNA sequence divergence studies, Mandiwana-Neudani *et al.* (2019) proposed that, at 3.3% divergence from its phylogenetically closest species (*gutturalis*), *uluensis* may warrant full-species status. *Scleroptila shelleyi*, is closer genetically and clusters phylogenetically with the southern African francolins (Fig. 1) which Mandiwana-Neudani *et al.* (2019) place within a separate species, *Scleroptila levalliantoides* (Orange River Francolin). Moreover, in northeastern Africa, the very low 0.6–1.6% sequence divergence values for *archeri* and *lorti* from *gutturalis* suggest that they are micro-geographic and/or clinal variants that may not warrant taxonomic recognition.



**Figure 1.** Cladogram (evolutionary tree) for *Scleroptila* francolins. Numbers above branch points are jackknife support values (source: Mandiwana-Neudani *et al.* 2019)

#### Recommendations

Given the above, it may now be more appropriate to consider *uluensis* as either being a full species as proposed by Mandiwana-Neudani *et al.* (2019), closest to, or as a subspecies of *gutturalis*. There appears to be no strong evidence for continuing to retain *uluensis* as a subspecies of *S. shelleyi*.

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