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Systematic and taxonomic issues concerning some East African bird species, notably those where treatment varies between authors

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Summary

The taxonomy of various East African bird species is discussed. Fourteen of the non-passerines and forty-eight of the passerines listed in Britton (1980) are considered, with reference to treatments by various subsequent authors. Twenty-three species splits are recommended from the treatment in Britton (*op. cit.*), and one lump, the inclusion of Jackson's Hornbill *Tockus jacksoni* as a race of *T. deckeni*.

Introduction

With a revision of Britton (1980) now nearing completion, this is the first of two papers highlighting the complexities that surround some East African bird species. All appear in Britton in one form or another, but since that landmark publication our knowledge of East African birds has increased considerably, and with the advances in DNA sequencing, our understanding of avian systematics and taxonomy is continually moving forward. A tidal wave of phylogenetic studies in the last decade has revolutionized our understanding of the higher-level relationships of birds. Taxa previously regarded as quite distantly related have been brought together in new classifications and some major groups have been split asunder (Knox 2014). As a result we are seeing the familiar order of families and species in field guides and checklists plunged into turmoil.

The speed at which molecular papers are being published continues at an unprecedented rate. We must remember, however, that while many molecular results may indicate a relationship, they do not necessarily prove one. The evidence presented is sometimes scant and the taxonomic sampling incomplete, so that further studies may be required to resolve recommendations. Elsewhere we see some less well-researched statements concerning species limits that appear to lack any real evidence or published arguments.

This paper is intended to bring to the attention of all with an interest in East African birds the advances in our knowledge of certain species that have been published since Britton (*op. cit.*), and also to highlight issues that require additional and often urgent attention in order to reach a reasonable conclusion. It is hoped that as a result of this publication, others will be encouraged to offer comments and recommendations.

For species occurring in Kenya, the order of families, English names and nomenclature follow those used in the *Checklist of the Birds of Kenya 4th Edition* (EANHS 2009). For species that occur only in Tanzania or Uganda, names and nomenclature follow the *Birds of Africa* volumes 1–7. Names shown in bold are those of East African

taxa for which full species status is recommended here. The sign > signifies cases where a species name needs to be changed from that used in the Kenya Checklist.

Taxonomic issues

Family Phasianidae

Orange River Francolin *Francolinus levaillantoides*
> Archer's Francolin *Scleroptila gutturalis*

The acacia red-winged francolins of Africa have long been known under the name *Francolinus levaillantoides*. Recent published changes / corrections include:
i) Correct spelling of the name to *levalliantoides* as originally spelt by Smith (1836).
ii) Change of genus from *Francolinus* to *Scleroptila* following Crowe *et al.* (1992).

The Orange River Francolin has long comprised all the southern African subspecies of *levalliantoides* as well as the northern birds treated by Mackworth-Praed & Grant (1957) under *Francolinus afer* as *F. a. stantoni, F. a. friedmanni, F. a. archeri, F. a. lorti* and *F. a. gutturalis*. Hall (1963) regarded the red-winged francolins of the northern and southern acacia steppe as conspecific, an arrangement followed by White (1965), Snow (1978), Britton (1980), Zimmerman *et al.* (1996), Dickinson (2003) and Dickinson & Remsen (2013).

In the northern acacia belt these francolins occur in much the same habitat as southern birds, in sparse grass cover on rocky hillsides. In total there are five populations that range from Eritrea, Ethiopia and northern Somalia south to northern Kenya and northwest Uganda. Northern Kenya birds in the Huri Hills and on Mt Kulal appear identical with the form *friedmanni* (Grant & Mackworth-Praed 1934, type locality Bodessa, southern Ethiopia), while those collected on Mt Moroto in northeastern Uganda in 1963 are similar.

The name *gutturalis* Rüppell 1835 has date priority over *levalliantoides* Smith 1936. Following the revised taxonomy and nomenclature of Crowe *et al.* (1992, 2006), and as adopted by Dickinson & Remsen (2013), the species is therefore now known as *Scleroptila gutturalis*, and comprises three northern subspecies (*gutturalis, lorti* and *archeri*) and three southern ones (*jugularis, pallidior* and *levalliantoides*). Regarding a common name it may be preferable to regard our East African birds as Archer's Francolin rather than retain a purely southern African name, Orange River Francolin.

Family Procellariidae

Audubon's Shearwater *Puffinus lherminieri*
> Tropical Shearwater *Puffinus bailloni*

Current taxonomy surrounding Indian Ocean shearwaters traditionally known as Audubon's Shearwater *P. lherminieri* has long been an issue of debate. Several forms (including *persicus, nicolae, colstoni* and *temptator*) are all possible in East African waters. The Mascarene Shearwater *P. atrodorsalis* is not recognized, as DNA analysis has revealed it to be indistinguishable from *bailloni* (Bretagnolle *et al.* 2000). Meanwhile recognition of *bailloni* as a separate species from *lherminieri* follows Austin *et al.* (2004), Onley & Scofield (2007), Dickinson & Remsen (2013) and Safford & Hawkins (2013).

Family Laridae

Little Tern *Sternula albifrons*
[Saunders's Tern *Sternula* (*a.*) *saundersi*]
It is well known that the differences between Little and Saunders's Terns are minor,

and that separation of the two is almost impossible except when dealing with specimens or individuals in full breeding plumage, and that many East African records could apply to either form. Some authors, notably Clancey (1982), were of the opinion that the two are probably conspecific, and Cramp (1985), while treating *saundersi* as a separate species, felt that reasons for splitting it from *albifrons* were poor. With the two not always separable from one another (Hollom *et al.* 1987), many, if not most of the features that supposedly distinguish *saundersi* actually intergrade with characters of *albifrons* (Chandler & Wilds 1994), and second year *albifrons* in their post breeding plumage will often appear very similar in the field to *saundersi.* Variation in *albifrons* at the northern tip of the Red Sea is such that separation of the two forms is not possible unless in the hand (Itai Shanni *pers. com*), but when breeding, *saundersi* is always exclusively marine in its choice of habitat (Chandler & Wilds 1994).

Cramp (*op. cit.*) believed that *saundersi* was characterized in adult breeding plumage by its smaller size, deep black outer primaries with only a faint grey bloom, black outer primary shafts, more white on forehead and less above the eye making the forehead patch appear squarer, darker grey rump, and olive or brown feet with yellow only on the rear tarsus and soles. While the above characters hold true for the Red Sea population, they may not for all birds in other populations, and one out of six birds from northern and eastern Arabia and three out of twelve Karachi breeders had the colour of the outer primaries and shafts intermediate between *saundersi* and nominate *albifrons* (Cramp *op. cit.*).

Given the degree of uncertainty that surrounds the positive identification of these two forms in East African waters, together with the fact that intermediates do occur (Olsen & Larssen 1995), it would seem that pending molecular evidence to the contrary, *saundersi* is currently best considered a race of *S. albifrons.*

Family Psittacidae

Brown-necked Parrot *Poicephalus robustus*

Clancey (1997), Symes (1999), Hockey *et al.* (2005) and Perrin (2005) have all favoured recognition of *Poicephalus robustus* as a distinctive Cape endemic, with East African birds thus becoming *Poicephalus fuscicollis suahelicus.* However, others, including Dowsett-Lemaire (2004), Dowsett *et al.* (2008) and Dickinson & Remsen (2013), prefer to retain *Poicephalus robustus* with three distinct regional subspecies pending convincing evidence to the contrary.

Family Strigidae

White-faced Scops Owl *Ptilopsis leucotis*

[Southern White-faced Scops Owl *Ptilopsis* (*l.*) *granti*]

According to DNA evidence the White-faced Scops Owls are very different from typical scops owls of the genus *Otus.* As a result Koenig *et al.* (1999) placed them in a separate genus *Ptilopsis*, on account of the much larger eyes, and ear-openings that are twice as large as those of any *Otus* species. Koenig *et al.* (*op. cit.*) also followed van der Weyden (1973) in considering the southern form *granti* worthy of species recognition as geographical variation in the song would seem to parallel that of the sub-specific division within *leucotis.* However, certain aspects of the voice of *leucotis* require further investigation, notably the nature and precise area of any supposed transitional dialect in Kenya and Uganda, and the existence of a reported secondary song in the northern form. To date there are scant data from critical areas astride the equator where the transition from one call to the other is alleged to take place. Pending fur-

ther molecular and vocal evidence to the contrary, southern birds would appear best treated for now as a race of *leucotis,* following Dickinson & Remson (2013).

Spotted Eagle Owl *Bubo africanus*
[Greyish Eagle Owl *Bubo* (*a.*) *cinerascens*]
Koenig *et al.* (1999) separated *cinerascens* on the basis of size and eye colour. However ,the presence of both yellow- and brown-eyed birds around Chanler's Falls, Samburu District and in the Lower Tana area suggests that many individuals, and particularly the form known as *tanae*, may be the product of intergradation. This, together with the absence of any vocal or other significant differences, suggests that *cinerascens* is best retained as a race of *africanus* pending molecular evidence to the contrary, a course followed by Dickinson & Remson (2013).

Fraser's Eagle Owl *Bubo poensis*
[Usambara Eagle Owl *Bubo* (*p.*) *vosseleri*]
Although *B. vosseleri* was treated as a full species by Zimmerman *et al.* (1996), Dowsett-Lemaire (2006) showed that *vosseleri* produces guttural trills identical to those of nominate *poensis*, referring also to Hunter *et al.* (1998) who successfully used recordings of *poensis* from Rwanda to stimulate *vosseleri* in the Uluguru Mountains, Tanzania. Pending convincing evidence to the contrary, treatment of *vosseleri* as a race of *poensis* follows Dowsett-Lemaire (2006) and Dickinson & Remsen (2013).

Family Caprimulgidae

Fiery-necked Nightjar *Caprimulgus pectoralis*
[Black-shouldered Nightjar *Caprimulgus* (*p.*) *nigriscapularis*]
While the *C. pectoralis* complex remains the subject of debate, there is much agreement that throughout its geographical range there appear to be no significant differences in calls, and that any presumed morphological distinctions are not diagnostic (Louette 1990, Dowsett & Dowsett-Lemaire 1993, Zimmerman *et al.* 1996, Jackson 2013). However, following Fry *et al.* (1988), Cleere (1995) and Cleere & Nurney (1998), some still regard *nigriscapularis* as a separate species. Pending further molecular evidence, it is felt that *nigriscapularis* remains best retained as the northern race of *C. pectoralis* following Dickinson & Remsen (2013) and Jackson (2013).

Montane Nightjar *Caprimulgus poliocephalus*
[Ruwenzori Nightjar *Caprimulgus (p.) ruwenzorii*
Usambara Nightjar *Caprimulgus (p.) guttifer*]
Some authors consider *C. poliocephalus* monotypic, with species status given to both *ruwenzorii* and *guttifer*, while others treat *guttifer* as a race of *C. ruwenzorii* following Cleere & Nurney (1998). Vocal differences between all three forms appear to be no more than dialectic, while morphologically there is a cline of decreasing white in the outer tail feathers from nominate birds through *ruwenzorii* to *guttifer* (Louette 1990, Dowsett & Dowsett-Lemaire 1993). Treatment of *ruwenzorii* and *guttifer* as races of *C. poliocephalus* follows Dowsett *et al.* (2008), Dickinson & Remsen (2013) and Jackson (2014).

Family Bucerotidae

Red-billed Hornbill *Tockus erythrorhynchus*
[Ruaha Hornbill *Tockus (e.) ruahae*]
While it has been proposed that the recently described *ruahae* be treated as a full spe-

cies, based on facial skin and eye colour, calls and displays, Hockey *et al.* (2005) considered it best retained as a subspecies, pending further study (as was initially suggested by Kemp & Delport 2002). Without more conclusive evidence to the contrary, treatment of *ruahae* as a race of the Red-billed Hornbill *T. erythrorhynchus* follows Hockey *et al.* (*op. cit.*) and Dickinson & Remsen (2013).

Von der Decken's Hornbill *Tockus deckeni*
[Jackson's Hornbill *Tockus* (*d.*) *jacksoni*]
Tockus jacksoni is often treated as a full species, but vocalizations are similar and displays are identical to those of Von der Decken's Hornbill. Pending conclusive molecular evidence to the contrary, treatment as a race of *T. deckeni* follows Kemp & Crowe (1985), Kemp (1995, 2001) and Dickinson & Remsen (2013).

Family Picidae

Bennett's Woodpecker *Campethera bennettii*
[Speckle-throated Woodpecker *Campethera* (*b.*) *scriptoricauda*]
The status of *scriptoricauda* remains controversial. It has been variously treated as a race of *C. nubica* or *C. bennettii*, or as a separate species *C. scriptoricauda*. The extent to which it intergrades with either *nubica* or *bennettii* remains unclear, but it seems unlikely that *scriptoricauda* will ever prove to be reproductively isolated, and both Short (1973) and Dowsett & Dowsett-Lemaire (1993) recommended that it remain merged with *bennettii* pending evidence to the contrary. Treatment as a race of *C. bennettii* follows Short (1988), Zimmerman *et al.* (1996) and Dickinson & Remsen (2013).

African Grey Woodpecker *Dendropicos goertae*
[Grey-headed Woodpecker *Dendropicos* (*g.*) *spodocephalus*]
Prigogine & Louette (1983) and Winkler *et al.* (1995) both separated *P. spodocephalus* (including *rhodeogaster* of Ethiopia, Kenya and northern Tanzania) from the more lowland *P. goertae* (Uganda, northern and western Kenya). The lack of any known intergradation between the two forms in East Africa may be due to the fact they do not actually meet, though there is evidence of some interbreeding in Rwanda with the Olive Woodpecker *D. griseocephalus*. The forms *rhodeogaster* and *goertae* are behaviourally, vocally, morphologically and ecologically very similar, and with many topographical and human-induced barriers separating them, there is little opportunity for interbreeding (Short 1988). Treatment of both *spodocephalus* and *rhodeogaster* as races of *P. goertae* follows Short (1988), Dowsett & Dowsett-Lemaire (1993), Zimmerman *et al.* (1996) and Dickinson & Remsen (2013).

Family Platysteiridae

Forest Batis *Batis mixta*
Dark Forest Batis *Batis crypta*
Fjeldså *et al.* (2006) presented morphological and molecular evidence to show that *Batis mixta* consists of two very different species that may not even be closely related to each other, with *B. crypta* near to birds of the Malawi Rift, and *B. mixta* clustering with *B. diops* of the Albertine Rift. Meanwhile, reported vocal differences between *mixta* in the northern Tanzania highlands and *ultima* in the Kenya coastal lowlands and East Usambaras may itself be worthy of further investigation.

Eastern Black-headed Batis *Batis minor*
Western Black-headed Batis *Batis erlangeri*

Treatment of *Batis erlangeri* as a separate species from *B. minor* has been proposed by Louette (2005), and indeed calls of Kenya coastal birds (*B. m. minor*) are very different from those of *erlangeri* (Dowsett-Lemaire & Dowsett 2014). Pending molecular evidence to the contrary, the recognition of two species is recommended.

Family Malaconotidae

Tropical Boubou *Laniarius aethiopicus*
Coastal Black Boubou *Laniarius nigerrimus*

Recently it was demonstrated that the all-black birds on Manda Island, Lamu District, are vocally and behaviourally quite distinct from black-and-white *L. a. sublacteus* (Turner *et al.* 2011). Nguembock *et al.* (2008) in their phylogeny of some *Laniarius* bushshrikes, showed that an all-black bird (*erlangeri*) from Somalia was not closely related to *L. aethiopicus*, and pointed out that it warranted species status. Whether the black boubous of coastal Kenya represent the same species as *erlangeri* can be better determined when their DNA is compared. Although Nguembock *et al.* (*op. cit.*) recommended separating both *sublacteus* and *major* from the traditional *L. aethiopicus* complex, further study of vocalizations together with additional molecular work that includes representatives of *erlangeri, nigerrimus* and *somaliensis* would seem necessary to clarify relationships and species limits within this group of bushshrikes. In the meantime Turner *et al.* (2013) have proposed that the all-black coastal boubous in eastern Kenya at Kipini and Manda Island be separated from *L. aethiopicus* and treated again as *Laniarius nigerrimus* (Reichenow 1879).

Family Laniidae

Common Fiscal *Lanius collaris*

Fuchs *et al.* (2011a) found that the Common Fiscal *Lanius collaris* as traditionally defined does not form a monophyletic group, and that two clear lineages exist within the complex. The authors recommend that a Northern Fiscal (including *capelli*, *humeralis* and *smithii*) be given species status separate from a Southern Fiscal (including *collaris* and *marwitzi*). This is similar to an earlier arrangement proposed by Harris & Franklin (2000) on the basis of distinct vocal differences between the two groups. However pending further supporting evidence, most notably from critical areas in southwest Uganda and western Tanzania, continued recognition of two groups within a single species may be more appropriate.

Family Dicruridae

Velvet-mantled Drongo *Dicrurus modestus coracinus*

The true taxonomic status of *coracinus* remains unclear. Opinion as to whether this African mainland forest form belongs with *D. modestus* of Príncipe Island or with the Common Drongo *D. adsimilis* varies among authors. In all areas across equatorial Africa *coracinus* is very much a forest and forest-edge bird, while *adsimilis* is typically an open savanna bird, and while the two appear to behave as separate species where they meet, intergrades do occur (Chapin 1954, Pearson 2000). In Kenya, birds attributed to *coracinus* are known only from Kakamega (though due to continuing forest fragmentation there have been few if any post–1990 records), but in Uganda it is present both in and at the edges of several southern, western and south-western forests including forest edges along the northern shores of Lake Victoria. Meanwhile, in north-

east Tanzania, birds resembling and behaving like *coracinus* have been reported from the Usambaras at Amani and Mazumbai, and these deserve further scrutiny. Pending evidence to the contrary, continued treatment of *coracinus* as a race of *D. modestus* follows Zimmerman *et al.* (1996), Pearson (2000) and Dickinson & Christidis (2014).

Family Paridae

Rufous-bellied Tit *Melaniparus rufiventris*
[Cinnamon-breasted Tit *Melaniparus* (*r.*) *pallidiventris*]
Sibley & Monroe (1990) treated *pallidiventris* as a separate species based on its different eye and belly colour. However, as noted by Hockey *et al.* (2005), belly colour varies clinally while eye colour varies from yellow in *rufiventris* to dark brown in *pallidiventris*, and pale brown in intergrades and intermediates. Dowsett & Dowsett-Lemaire (1993) questioned the use of eye colour as a species isolating mechanism, and later Dowsett *et al.* (2008) felt that with the distribution of the two forms contiguous there was no reason to suppose that two species were involved. The race *masukuensis* with its pale pinkish-cinnamon belly and pale yellowish-brown eyes may represent an intermediate form. Placement of all Afrotropical tit species in the genus *Melaniparus* follows Johansson *et al.* (2013) who despite recommending species status for *pallidiventris* showed little divergence between it and *rufiventris*. Dickinson & Christidis (2014) retain *pallidiventris* as a race of *rufiventris*.

Northern Black Tit *Melaniparus leucomelas*
White-shouldered Black Tit *Melaniparus guineensis*
The true systematic position of *Parus niger, carpi, leucomelas, guineensis* and *insignis* has long been a subject of debate. The pale yellowish-eyed *guineensis* has often been treated as a full species (Sibley & Monroe 1990, Harrap & Quin 1996), despite some overlap with dark-eyed *insignis* in central Uganda where both pale- and dark-eyed birds reportedly occurred in the same foraging groups. Johansson *et al.* (2013) found that *leucomelas* and *insignis* were sister taxa, with *guineensis* divergent from both, and so recommended recognition of a dark-eyed *M. leucomelas* (including *insignis*) and a pale-eyed *M. guineensis*. Dickinson & Christidis (2014) follow Johansson *et al.* (*op. cit.*).

Family Hirundinidae

Black Saw-wing *Psalidoprocne pristoptera*
[Eastern Saw-wing *Psalidoprocne* (*p.*) *orientalis*]
[Southern Saw-wing *Psalidoprocne* (*p.*) *holomelas*]
Treatment of East African birds under either *P. pristoptera* or *P. holomelas* has varied between authors. Features such as wing length, depth of tail fork, shade of gloss on the upperparts and colour of the underwing coverts have all played a part in determining which form belongs where. The under wing-coverts are brown or grey-brown in *massaica, ruwenzori* and *holomelas*, yet whitish in *oleaginea* and *orientalis*, and several of these forms have been regarded as incipient species. Sheldon *et al.* (2005), while leaving all options open, implied that more than one species may indeed be involved. The ranges of several forms appear to overlap with one another, with *orientalis*, for example, being recorded within the range of birds with brown under wing-coverts in several parts of southern and eastern Tanzania, and small-winged birds occurring in eastern and coastal areas of southeastern Kenya and Tanzania. Just how many such records refer to resident breeding forms as opposed to southern migrants remains unclear. Pending detailed evidence to the contrary, the continued treatment of all forms within *P. pristoptera* would appear most appropriate.

Family Alaudidae

Fawn-coloured Lark *Calendulauda africanoides*
[Foxy Lark *Calendulauda (a.) alopex*]
East African birds (*intercedens*) have long been treated as a race of *Mirafra africanoides*. Recently, however, de Juana *et al.* (2004) and Hockey *et al.* (2005), restricted *africanoides* to southern Africa, and treated east and northeast African birds as the Foxy Lark *Calendulauda alopex*. With no molecular data to confirm the placement of *intercedens* with *alopex*, and as divergence from the southern races is modest, treatment with *C. africanoides* is maintained pending more conclusive evidence, a course also adopted by Dickinson & Christidis (2014).

Spike-heeled Lark *Chersomanes albofasciata*
Beesley's Lark *Chersomanes beesleyi*
Beesley's Lark was formerly considered a race of *C. albofasciata*, but molecular evidence now suggests it is worthy of species status, having separated from *albofasciata* approximately three million years ago (Alström *et al.* 2013).

Somali Short-toed Lark *Calandrella somalica*
[Athi Short-toed Lark *Calandrella* (*s.*) *athensis*]
In the absence of any convincing evidence, there appears no justification to treat *athensis* as anything other than a race of *C. somalica*.

Family Cisticolidae

Winding Cisticola *Cisticola galactotes*
[Heuglin's Cisticola *Cisticola* (*g.*) *marginatus*]
[East Coast Cisticola *Cisticola (g.) haematocephalus*]
The *Cisticola galactotes* species complex has been considered by various authors to comprise 7–12 subspecies. Recent studies in northwest Zimbabwe found differences between some subspecies in both call and behaviour, leading to the suggestion that *C. galactotes* as currently defined represents a complex of three or more species each with different song types (Hustler 2001). On the basis of voice alone, West and East African birds may form the *marginatus* group (including among others *amphilectus, nyansae* and *suahelicus*); south central African birds (*luapula*) another group; with nominate *galactotes* of coastal KwaZulu Natal, southern Mozambique and Malawi a third group. Finally, the Ethiopian highland form *lugubris* and the coastal East African *haematocephalus* may both be considered worthy of monotypic species status (Hockey *et al.* 2005, Ryan *et al.* 2006). But just how much these vocal differences may simply reflect local dialects remains unclear. A more thorough review of this complex is required, including molecular information.

Tana River Cisticola *Cisticola restrictus*
Identified only from seven museum specimens collected in semi-arid bush in the Lower Tana basin. This remains a taxon of uncertain validity, with a very limited distribution in Tana River District at Sangole, Ijara, Mnazini, Garsen and Karawa (Traylor 1967, Britton 1980). There is the possibility that it may be a hybrid between Rattling Cisticola *C. chiniana* and Ashy Cisticola *C. cinereolus* (Dowsett-Lemaire & Dowsett 2014). Despite extensive fieldwork throughout the Lower Tana, there have been no recent records and there are no field or voice descriptions. Although considered distinct from both *C. chiniana* and *C. cinereolus* by Traylor (1967), specimens

closely resemble those two forms. It is therefore recommended that a re-appraisal of all specimens be undertaken.

Wailing Cisticola *Cisticola lais*
[Lynes's Cisticola *Cisticola* (*l.*) *distinctus*]
In East Africa the Wailing Cisticola contains two well-defined races, *distinctus*, considered by some authors a separate species, and *semifasciatus* in southern Tanzania. Dowsett & Dowsett-Lemaire (1993) found that the complex vocalizations of *distinctus* with rattles, low trills and repetitions were exact replicas of the repertoire of *lais,* thus clearly suggesting that the two forms are best considered conspecific. This treatment is adopted by Dickinson & Christidis (2014).

Piping Cisticola *Cisticola fulvicapilla*
Long-tailed Cisticola *Cisticola angusticauda*
Although these are treated as two species by several authors, *angusticauda* is known to hybridize with *fulvicapilla* in many parts of Zambia (Dowsett & Dowsett-Lemaire 1980, Irwin 1993, Dowsett *et al.* 2008), with no significant behavioural or ecological differences. However, just what transpires at their mutual distributional boundaries in eastern Tanzania is unclear. Both forms share song types but have distinct dialects, and their voices reportedly differ where they meet. Behaviour and ecology are similar, but there are differences in wing and tail structure, and *angusticauda* has a distinctive breeding dress (Tye 1997). Pending molecular and other evidence from critical areas in eastern Tanzania, a two-species arrangement would at the moment seem the most appropriate, a course followed by Dickinson & Christidis (2014).

Bar-throated Apalis *Apalis thoracica*
[Taita Apalis *Apalis* (*t.*) *fuscigularis*]
In East Africa the Bar-throated Apalis is characterized by several endemic subspecies, and one, *fuscigularis* in the Taita Hills, is treated as a full species by several authors (Collar *et al.* 1994, Ryan *et al.* 2006). However, while several populations may be morphologically distinctive, all are genetically very closely related. In the Eastern Arc Mountains of Tanzania a 'leap-frog ' pattern of distribution is seen with the widespread "green-backed, yellow-bellied *griseiceps*" from the Udzungwas to the Ukagurus being replaced by a "grey-backed, white-bellied *pareensis*" in the South Pares, but then reappearing on Mts Meru and Kilimanjaro and in the Crater Highlands and the Chyulu Hills. Meanwhile the melanic *fuscigularis* is restricted to the Taita Hills, while an intermediate polytypic form *murina* occurs in the Usambaras and Ngurus and then re-occurs further south in the southern Tanzania highlands and along the Malawi Rift (Fjeldså *et al.* 2010). Pending detailed molecular evidence to the contrary, treatment as one highly variable species would seem the most appropiate, a course adopted by Dickinson & Christidis (2014).

Yellow-breasted Apalis *Apalis flavida*
The 'brown-tailed' dry country *flavocincta* appears sympatric with the 'green-tailed' *pugnax* in some central Kenya areas where they behave as separate forms and are vocally distinct (Lewis 1989). Hall & Moreau (1970) considered *flavocincta* an incipient species, while Sibley & Monroe (1990) also treated 'brown-tailed' birds as a separate species. However, with reported intergrades between *flavocincta* and *neglecta*, *golzi* and *pugnax*, and also *caniceps* and *golzi,* reproductive isolation may not be complete (Irwin 1997). Pending detailed molecular evidence to the contrary, the entire *flavida*

complex seems best treated as a single polytypic species. Such treatment is adopted by Dickinson & Christidis (2014).

Buff-throated Apalis *Apalis rufogularis*
[Kungwe Apalis *Apalis r. argentea*]
Hall & Moreau (1970) and Sibley & Monroe (1990) considered *argentea* an incipient species *contra* Traylor (1986) and Dowsett & Dowsett-Lemaire (1993). Meanwhile a comparison of sonograms of calls from western Uganda, Nyungwe Forest, Rwanda, and the Mahale Mountains NP, western Tanzania (Dowsett-Lemaire & Dowsett 1990, Moyer *et al.* 2006) shows that without DNA evidence to the contrary, there is no reason why *argentea* should be considered anything other than a race of *rufogularis*. This treatment is adopted by Dickinson & Christidis (2014).

Family Pycnonotidae

Shelley's Greenbul *Arizelocichla masukuensis*
There are two subspecific groups: a grey-headed western group (*kakamegae/kungwensis*) and a green-headed eastern group (*masukuensis/roehli*), each considered an incipient species by Hall & Moreau (1970) and Sibley & Monroe (1990). Meanwhile, with crucial vocalization material largely unavailable, both Dowsett & Dowsett-Lemaire (1993) and Roy *et al.* (1998) recommended further investigation, and recently Moyer (2006) found that the voice of *kungwensis* in the Mahale Mountains was indeed very similar to that of *roehli* from the Udzungwa Mountains in eastern Tanzania. Treatment of all forms as races of *masukuensis* appears to be the best course pending molecular evidence to the contrary. A return to the genus *Arizelocichla* follows Johansson *et al.* (2007) and Dickinson & Christidis (2014).

Eastern Mountain Greenbul *Arizelocichla nigriceps*
Southern Mountain Greenbul *Arizelocichla fusciceps*
Revised treatment of the montane greenbuls follows Roy *et al.* (1998) and Johansson *et al.* (2007) whereby the southern *fusciceps* complex (including *chlorigula* and *neumanni*) represents a distinct phylogenetic branch separate from the *nigriceps* populations in the Usambaras, Pares, Crater Highlands and Ngurumans (Fjeldså *et al.* 2010). A return to the genus *Arizelocichla* follows Johansson *et al.* (*op. cit.*) and Dickinson & Christidis (2014).

Tiny Greenbul *Phyllastrephus debilis*
Montane Tiny Greenbul *Phyllastrephus albigula*
Fuchs *et al.* (2011b) have recommended that *albigula* be treated as a separate species from *debilis*, based on significant biometric differences between the lowland (*rabai*) and montane (*albigula*) populations in the Eastern Arc Mountains of Tanzania, with genetic divergence having occurred between 2.4 and 3.1 million years ago. Dickinson & Christidis (2014) follow Fuchs *et al.* (*op. cit.*), referring to *albigula* as the Green-crowned Greenbul.

Sassi's Olive Greenbul *Phyllastrephus lorenzi*
Status of this form (vagrant to western Uganda), remains under review, as it may be nothing more than a very dark Icterine Greenbul *P. icterinus* (Fishpool 2006).

Green-tailed Bristlebill *Bleda eximius*
> Yellow-lored Bristlebill *Bleda notatus*
Following Chappuis & Érard (1992), the yellow-lored, dark-eyed *notatus* is treated as a distinct species from *B. eximius*. Meanwhile, the East African form (*ugandae*), ranging from the middle Congo River east to Uganda and the Minziro Forest in northwest Tanzania has bright lemon-yellow eyes, and although included within *notatus* by Chappuis & Érard (*op. cit.*) it may be worthy of further scrutiny.

Common Bulbul *Pycnonotus barbatus*
[White-eared Bulbul *Pycnonotus* (*b.*) *dodsoni*]
The small and more scaly-patterned *dodsoni* has often been considered worthy of species status despite much hybridization with *P. b. tricolor* in areas of contact. On the slopes of the Kenya highlands there are populations (formerly known as *peasei*) that appear intermediate between *dodsoni* and *tricolor*, and similar intergradation occurs on the Kenya coast from Sokoke to Vanga. One option would be to consider *dodsoni* as a separate species with *peasei* a hybrid form, the other to retain *dodsoni* (including *chyulu, teitensis, littoralis* and *peasei*) as a subspecies. Pending more conclusive evidence, continued treatment of *dodsoni* as a race of *barbatus* follows Fishpool & Tobias (2005) and Dickinson & Christidis (2014).

Family Sylviidae

Little Rush Warbler *Bradypterus baboecala*
Eastern Rush Warbler *Bradypterus centralis*
Alström *et al.* (2011) place the Kenya highland form *elgonensis* and northeast Nigerian *chadensis* in a different *Bradypterus* lineage from southern African *baboecala* races, demonstrating clearly that they represent a separate species. Indeed, *elgonensis/centralis* birds in Uganda, Rwanda, northwest Tanzania and west and central Kenya differ markedly in voice from *moreaui / tongensis / msiri* birds in the rest of Kenya, Tanzania, Zambia, Malawi and South Africa, and also from *abyssinicus* in Ethiopia (Benson 1946). Dickinson & Christidis (2014) recognize *B. centralis* (including *elgonensis and chadensis*) as a full species, with *sudanensis* of South Sudan and western Ethiopia tentatively placed here pending confirmation of voice. The *B. baboecala* complex may best now be treated as comprising two species.

Southern Hyliota *Hyliota australis*
[Northern Hyliota *Hyliota* (*a.*) *slatini*]
Molecular data currently suggest that the hyliotas form a basal offshoot of the Sylviidae, and they are placed immediately before the Stenostiridae in Dickinson & Christidis (2014). Meanwhile, the position of the miombo Southern Hyliota *H. australis vis-à-vis* the tropical forest birds further north (*slatini* and *usambara*) requires further scrutiny. With differing habitats and reported vocal differences (Dowsett-Lemaire *pers. comm.*), it would seem that the widely separated northern forest birds might warrant consideration for separate species status.

Family Muscicapidae

White-headed Black Chat *Myrmecocichla arnotti*
[Ruaha Chat *Myrmecocichla* (*a.*) *collaris*]
The recently described Ruaha Chat was formerly considered an aberrant form of *M. arnotti*. However, Glen *et al.* (2011) showed that while all birds east of the Eastern Arc

Massif and southern highlands of Tanzania are nominate *arnotti,* those west of that mountain divide could all be ascribed to *collaris.* Moreover, they suggested that this taxon warranted full species status as the Ruaha Chat. This position has not been adopted by Dickinson & Christidis (2014) who treat the *M. arnotti* complex under one species, and also point out that an earlier name, *leucolaema*, given to a bird from the Ngurus, supercedes *collaris.*

Bocage's Akalat *Sheppardia bocagei*
Alexander's Akalat *Sheppardia insulana*

Formerly placed in *Cossypha*, the position of the '*bocagei*' and '*insulana*' groups has long been a subject of debate. While Prigogine (1987) maintained they were separate species others, notably Keith *et al.* (1992) and Dowsett & Dowsett-Lemaire (1993), preferred to retain *poensis* (= *insulana*) within *bocagei.* Recent fieldwork on both sides of Lake Tanyanika has shown that while the two groups may appear almost identical, their vocalizations and habitat choices are completely different. The song of *kungwensis* in western Tanzania is virtually identical to those of *kaboboensis* on the DR Congo side of the lake, and *S. insulana granti* on Mt Cameroon, yet very different from those of *S. bocagei ilyai,* only 60 km away, and *S. bocagei chapini* in southwest Tanzania and northern Zambia (Chappuis 2000, Moyer 2006, Moyer *et al.* 2006, Plumptre *et al.* 2008). For the use of *insulana* rather than *poensis* see Dickinson & Christidis (2014).

Pale Flycatcher *Bradornis pallidus*
[Wajir Grey Flycatcher *Bradornis* [*p.*] *bafirawari*]

The distinctive long-tailed and long-billed *bafirawari* is uniquely adapted to arid thorn bush in eastern Kenya where it occurs alongside the very similar but larger African Grey Flycatcher *B. microrhynchus neumanni,* and was accorded species status by Mackworth-Praed & Grant (1955). The two are so similar that Hall & Moreau (1962) noted that one of the paratypes of *bafirawari* collected on the same day as the type specimen had in fact been re-identified as a male *B. microrhynchus neumanni.* The long bill of *bafirawari* might link it to *subalaris*, which is the nearest race of *B. pallidus* geographically, though *bafirawari* and *subalaris* replace each other along the Tana River at Garissa and Bura respectively, without any suggestion of intergradation (Traylor 1970). More detailed scrutiny of both *bafirawari* and *subalaris* together with their relationships with *B. microrhynchus neumanni*, *bura*e and *taruensis* would seem appropriate, particularly in those areas of eastern and southeastern Kenya where their ranges converge and in places appear to overlap.

Family Turdidae

Olive Thrush *Turdus olivaceus*
> Abyssinian Thrush *Turdus abyssinicus*

Bowie *et al.* (2005) showed that the Olive Thrush complex includes species in two divergent clades, a southern '*olivaceus*' group and a northern '*abyssinicus*' group. The East African forms *abyssinicus, baraka, bambusicola, deckeni, oldeani* and *nyikae* appear best treated as races of *Turdus abyssinicus.*

Taita Thrush *Turdus helleri*
Usambara Thrush *Turdus roehli*

Treatment as full species follows Bowie *et al.* (2005). Both represent distinctive relict populations with a basal position in the "*abyssinicus*" group compared to other East African highland populations, and since they have been able to maintain their genetic integrity are probably indeed best regarded as species (Voelker *et al.* 2007).

Family Nectariniidae

Eastern Double-collared Sunbird *Cinnyris mediocris*
Usambara Double-collared Sunbird *Cinnyris usambarica*
Fülleborn's Double-collared Sunbird *Cinnyris fuelleborni*
Moreau's Sunbird *Cinnyris moreaui*

Three double-collared sunbird forms, *mediocris*, *usambarica*, and *fuelleborni*, occupy between them the Kenya highlands, the Crater Highlands of northern Tanzania, the Eastern Arc Mountains and the southern highlands along the Malawi Rift. These have until recently been treated as races *C. mediocris* (e.g., by Fry *et al.* (2000) and Dowsett *et al.* (2008)). Moreau's Sunbird *Cinnyris moreaui* ranges from the eastern parts of the Udzungwa highlands north to the Ngurus. It thus occupies an area between *mediocris* and *usambarica* to the north and *fuelleborni* to the southwest. Molecular data have shown that *N. mediocris* (*sensu latu*) is paraphyletic, comprising three distinct clades, each worthy of monotypic species status (Bowie *et al.* 2004). The same authors also confirmed full species status for *C. moreaui*, itself sister to Loveridge's Sunbird *C. loveridgei* of the Uluguru Mountains.

Stuhlmann's Double-collared Sunbird *Cinnyris stuhlmanni*
[Montane Double-collared Sunbird *Cinnyris ludovicensis*]
[Greater Double-collared Sunbird *Cinnyris afra*]

The montane sunbirds of the Albertine Rift (largely treated within *N. ludovicensis* by Britton 1980) continue to be the subject of debate. Prigogine (1979) discussed them in some detail, preferring to consider most forms as races of *stuhlmanni* rather than of *ludovicensis*. Dowsett & Dowsett-Lemaire (1993) were unconvinced that any were worthy of specific status on grounds that all were vocally and behaviourally indistinguishable from the *Nectarinia afra* complex. Later, Fry *et al.* (2000), while considering *afra* a southern African endemic, followed Prigogine (1979) in the recognition of *stuhlmanni* for all Albertine Rift birds, as do Dickinson & Christidis (2014).

Meanwhile, birds resembling *C. ludovicensis/afra whytei* from the Nyika Plateau, northern Malawi, are reported to occur along the drier eastern forest edges of the Udzungwa and Rubeho Mountains in southern Tanzania where they compete with *N. moreaui,* and these may belong to the *afra* complex (Fjeldså *et al.* 2010). Further details are awaited.

Little Purple-banded Sunbird *Cinnyris bifasciatus*
Tsavo Sunbird *Cinnyris tsavoensis*

The subspecific treatment of *Cinnyris bifasciatus* varies between authors, and is complicated by the largely unresolved status of *tsavoensis.* This form has a much narrower maroon breast band than *bifasciatus* and *microrhynchus* and appears also to differ in lacking an eclipse plumage. It is treated as a full species by Fry *et al.* (2000), Cheke & Mann (2001) and Dickinson & Christidis (2014) *contra* Zimmerman *et al.* (1996). While the range of *tsavoensis* does bisect that of *microrhynchus* in Kenya, there is no evidence to support the claim by Clancey & Williams (1957) that it is partly sympatric, and molecular evidence is still needed to confirm its full species status. Meanwhile Carswell *et al.* (2005), following Fry *et al.* (*op. cit.*), attribute Uganda birds to *C. b. strophium.* This race is not recognized by Cheke & Mann (*op. cit.*) or by Dickinson & Christidis (2014), so birds in Uganda, western Kenya and southern Tanzania would return to *microrhynchus.*

Family Passeridae

Kenya Rufous Sparrow *Passer rufocinctus*
>Rufous Sparrow *Passer cordofanicus*
[Shelley's Sparrow *Passer (c.) shelleyi*]

The rufous sparrows of Africa have been considered to represent one, two, four or six species, and while there is a broad measure of agreement that they are all long-isolated relicts of a formerly widespread single polytypic species, treatment has varied among authors. The three East African populations *cordofanicus, rufocinctus* and *shelleyi* were treated as races of the southern African *motitensis* by Britton (1980), Summers-Smith (1988), Dowsett & Dowsett-Lemaire (1993) and Dickinson (2003), but as separate species by Fry & Keith (2004). Pending molecular evidence to the contrary, East African birds appear best grouped together, but separate from those in southern Africa. Dickinson & Christidis (2014) treat both *rufocinctus* and *shelleyi* under *P. cordofanicus*, but admit full species status for *P. insularis* of Socotra.

Grey-headed Sparrow *Passer griseus*

Although traditionally treated as a single species, opinions have in recent years largely favoured a multi-species approach (Fry & Keith 2004), despite limited hybridization in zones of overlap. While in several areas some forms seem to behave as separate species, elsewhere others occur alongside one another producing both intermediate and indeterminate offspring. Currently in East Africa, the frequency of these hybrid birds and lack of any obvious vocal or behavioural distinctions suggest that all are best considered conspecific (Zimmerman *et al.* 1996). Meanwhile the status of *mosambicus*, and whether best placed with *griseus* or the Southern Grey-headed Sparrow *P. diffusus* remains unclear. While Pakenham (1979) and Dowsett-Lemaire & Dowsett (2006) have provisionally regarded it as a race of *P. griseus*. Fry & Keith (*op. cit.*) and Dickinson & Christidis (2014) treat it under *P. diffusus*.

Family Estrildidae

Black-crowned Waxbill *Estrilda nonnula*
Black-headed Waxbill *Estrilda atricapilla*
[Kandt's Waxbill *Estrilda kandti*]

Kandt's Waxbill *E. kandti* was originally described, from a juvenile specimen preserved in alcohol from Lake Kivu, eastern DR Congo, as a subspecies of the Black-crowned Waxbill *E. nonnula*. It was later thought by Prigogine (1975) to be a form of the Black-headed Waxbill *E. atricapilla* rather than *nonnula*, so that this name would have precedence over *E. a. graueri*. This was despite the fact that Grote had earlier re-examined the *kandti* type, reaffirming that it undoubtedly belonged with *nonnula* (Chapin 1954). Prigogine (1980) further suggested that this form (*graueri*, renamed *kandti*) was specifically distinct from both *atricapilla* and *nonnula*, with which there was no evidence of hybridization. In the Kivu Highlands, Rwanda and southwest Uganda *kandti* and *nonnula* often occur side by side in the same habitat, but on the whole tend to be separated by altitude with *kandti* largely above 2100 m and *nonnula* below that level. *E. kandti* has been recognized as a distinct species by Fry & Keith (2004) and Payne (2010).

However, several authors, including Short *et al.* (1990), Dowsett & Dowsett-Lemaire (1993), Zimmerman *et al.* (1996) and Dickinson & Christidis (2014) have not been persuaded that *kandti* should be split from *E. atricapilla*, and have considered that a third species within this complex is unlikely. Also that Prigogine's argument

for replacement of the name *graueri* is unconvincing. Pending further DNA evidence to the contrary it therefore seems appropriate to leave the name *kandti* within *E. nonnula*, and treat all montane populations within *E. atricapilla*. Thus, in East Africa we would have two disjunct montane populations occurring from 2100 to 3300 m: *E. a. graueri* in the Bwindi–Impenetrable–Virunga volcano region of southwest Uganda and Rwanda; and *E. a. keniensis* on Mt Elgon, the Aberdares and Mt Kenya.

Black-faced Waxbill *Estrilda erythronotos*
[Black-cheeked Waxbill *Estrilda* (*e.*) *charmosyna*]
Formerly considered conspecific, with two southern African forms (*erythronotos* and *soligena*) widely separated from the northeastern African forms (*delamerei* and *charmosyna*). While the two southern forms are black-bellied, in East Africa we have the black-bellied *delamerei* (to the south) and the pale-bellied *charmosyna* further north, which appear to be connected to *delamerei* by the grey-bellied *kiwanukae* (Wolters 1985). Fry & Keith (2004) separated *E. charmosyna* as a full species, but the reported presence of some dark-bellied individuals within the range of *charmosyna* cannot be fully explained, and there is evidence to suggest that birds at the base of the Ngong Hills and around Olorgesaillie (*kiwanukae*) may be hybridizing with *delamarei,* and that the entire population in the southern Rift Valley may involve hybrids. Pending a full molecular analysis, a return to single species treatment would appear to be the best option, and this course has been followed by Dickinson & Christidis (2014).

Family Motacillidae

Long-billed Pipit *Anthus similis*
Birds popularly referred to as the 'Nairobi Pipit' from Nairobi NP are very similar to birds collected in similar habitat in the Chyulu Hills, and indeed all Long-billed Pipits in Kenya are very closely related to each other irrespective of whether they occur at forest edge or in rocky savanna habitats (Finch *et al.* 2013). Meanwhile, in southern Tanzania the true systematic position of *winterbottomi* in high altitude grasslands/downs in the Njombe highlands, at Mt Rungwe and in the Matengo Highlands remains unclear. It has been associated with Jackson's Pipit *A. cinnamomeus latistriatus* (Clancey 1990) but is more likely a synonym of *A. n. nyassae* (Pearson 1992, Dowsett 2008). Further study appears warranted.

Buffy Pipit *Anthus vaalensis goodsoni*
The limits of *Anthus vaalensis* remain controversial, with some authors restricting it to southern Africa. Clancey (1990), however, treated *goodsoni* and Ethiopian *saphiroi* (earlier considered races of the Plain-backed Pipit *A. leucophrys* by Hall (1961) and Pearson (1992)) within an expanded *vaalensis*. *A. leucophrys zenkeri* (including *turneri*) approaches and may even meet *goodsoni* in parts of the Loita Hills and the eastern Serengeti grasslands, and as yet there is no clear evidence of any intergradation. The treatment of *goodsoni* within *vaalensis* is not without deep reservations, and it has been retained within *A. leucophrys* by Dickinson & Christidis (2014).

Family Fringillidae

African Citril *Cithagra citrinelloides*
Southern Citril *Crithagra hyposticta*
Western Citril *Crithagra frontalis*
C. frontalis and the 'grey-faced' *C. hyposticta* have been treated as two species separate from *C. citrinelloides* by van den Elzen (1985), Sibley & Monroe (1990) and Fry & Keith

(2004), but their ranges are contiguous, and any vocal differences may simply be dialectical (Dowsett & Dowsett-Lemaire 1993). However, races *brittoni* and *kikuyuensis* appear to overlap in a small area of western Kenya, and it seems appropriate for all 'grey-faced' forms to be grouped together, with *brittoni* treated as a race of *C. hypposticta* along with birds from the Imatong Mountains, South Sudan. Dickinson & Christidis (2014) recognize three species, but with some reservation. This is currently perhaps the best position, but clearly further studies are required to clarify relationships within this complex.

Black-throated Seedeater *Crithagra atrogularis*
Reichenow's Seedeater *Crithagra reichenowi*

Reichenow's Seedeater is variably treated as either a race of *C. atrogularis* or as a species *C. reichenowi,* with Érard (1974) and Dowsett & Dowsett-Lemaire (1993) treating it within *atrogularis*, and Irwin (1964), van den Elzen (1985, 1999), Zimmerman *et al.* (1996), Fry & Keith (2004) and Dickinson & Christidis (2014) all considering it worthy of full species status.

Brimstone Canary *Crithagra sulphurata*

In East Africa there are three or four populations: one (*frommi*) in southern and south-west Tanzania from the Matengo, Njombe and Mbeya highlands and the Ufipa Plateau north to the Iringa and Dabaga highlands; the second (*shelleyi*) in Uganda and northwest Tanzania south at least to Ngara District, also from the western and central Kenya highlands south to Nyanza, Nairobi, Narok, the Mara GR, Serengeti and Loliondo; while a third population (*sharpii*) at south Kilimanjaro appears isolated, with occasional wanderers reported from Moshi and the nearby Taita Hills. Elsewhere birds reported from the southeastern Tanzanian coastal lowlands north to Lindi District and not racially assigned, may be more closely allied to birds (*loveridgei*) in northern Mozambique rather than to those elsewhere in Tanzania. Although all authors (including Dickinson & Christidis 2014) treat all East African birds within *sharpei* (the oldest name available), there remains a case for closer scrutiny of all four East African populations.

Stripe-breasted Seedeater *Crithagra reichardi*
> Northern Stripe-breasted Seedeater *Crithagra striatipecta*
Streaky-headed Seedeater *Crithagra gularis*
> Northern Streaky-headed Seedeater *Crithagra canicapilla elgonensis*

Two forms (*striatipecta* and *elgonensis*) have in the past been treated as the northernmost races of two species well known in southern Africa, *C. reichardi* and *C. gularis* respectively. Zimmerman *et al.* (1996) examined this position, and despite considerable individual variation in ventral streaking, concluded that all Kenyan birds could be assigned to one species or the other. That two similar seedeaters thus appear to co-exist alongside each other in bushed and wooded savanna of northwest Kenya and south Sudan is nonetheless remarkable. The absence of *striatipecta* from Uganda may be real, but at the same time some sight records of *elgonensis* there may possibly refer to *striatipecta.*

Turner (2013) has suggested that East African *striatipecta* be treated as specifically distinct from the largely miombo endemic *C. reichardi*, and that the northern races *canicapilla* and *elgonensis* be treated under *C. canicapilla*, a separate species from the geographically distant southern *C. gularis.* This course has been followed by Dickinson & Christidis (2014).

Streaky Seedeater *Crithagra striolata*

[Yellow-browed Seedeater *Crithagra* (*s.*) *whytii*]

Several authors, including Sibley & Monroe (1990), Fry & Keith (2004), Nguembock *et al.* (2009) and Fjeldså *et al.* (2010), treat the distinctive *whytii* as a separate species. While Dowsett & Dowsett-Lemaire (1993) and Dowsett *et al.* (2008) disagreed on grounds that the two were ecologically and vocally alike, Fry & Keith (2004) referred to several structural differences that included a smaller bill, shorter wing and longer leg than in *striolata*. Dickinson & Christidis (2014) retain *whytii* as a race of *striolata*.

Family Emberizidae

Cape Bunting *Emberiza capensis*

[Vincent's Bunting *Emberiza c. vincenti*]

Fry & Keith (2004) treated *vincenti* as a separate species despite earlier reasons against such a move from Lowe (1932). With song and call notes identical to those of South African birds, there appears little justification for regarding *vincenti* as anything other than a dark plumaged race of *E. capensis* (Irwin 2007, Dowsett *et al.* (2008), Dickinson & Christis 2014).

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Eagle Hill, Kenya: changes over 60 years

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Summary

Eagle Hill, the study site of the late Leslie Brown, was first surveyed over 60 years ago in 1948. The demise of its eagle population was near-complete less than 50 years later, but significantly, the majority of these losses occurred in the space of a few years in the late 1970s. Unfortunately, human densities and land use changes are poorly known, and thus poor correlation can be made between that and eagle declines. Tolerant local attitudes and land use practices certainly played a significant role in protecting the eagles while human populations began to grow. But at a certain point it would seem that changed human attitudes and population density quickly tipped the balance against eagles.

Introduction

Raptors are useful in qualifying habitat and biodiversity health as they occupy high trophic levels (Sergio *et al.* 2005), and changes in their density reflect changes in the trophic levels that support them. In Africa, we know that raptors occur in greater diversity and abundance in protected areas such as the Matapos Hills, Zimbabwe (Macdonald & Gargett 1984; Hartley 1993, 1996, 2002 a & b), and Sabi Sand Reserve, South Africa (Simmons 1994). Although critically important, few draw a direct correlation between human effects on the environment and raptor diversity and density. The variables to consider are numerous and the conclusions unworkable due to different holding-capacities, latitude, land fertility, seasonality, human attitudes, and different tolerances among raptor species to human disturbance.

Although the concept of environmental effects caused by humans leading to raptor decline is attractive and is used to justify raptor conservation, there is a need for caution in qualifying habitat 'health' in association with the quantity of its raptor community. The examination of raptor guilds would be more insightful than focusing on single species studies in proving this theory. The occurrence of Martial Eagle *Polemaetus bellicosus*, Peregrine Falcon *Falco peregrinus minor*, Rüppell's Vulture *Gyps rueppellii* and Crowned Eagle *Stephanoaetus coronatus* would infer that the habitat had open savanna with wildlife, extensive cliff areas, and forest. More significantly, one might conclude that the habitat had a low human occupancy, while maintaining good populations of game birds, doves, small and large wild ungulates, small carnivores, monkeys and forest- or thicket-dwelling small duikers. But they may be wrong. To see a raptor without knowing its individual status within the community implies very little. Such as seeing (as has been the case) all four of these species in the middle of Nairobi City where only one could possibly be resident as the habitat is totally unsuitable for the other three (pers. obs.). Such observations can easily be the result of rapid 'one off' assessments; a road count for example. The longer the time spent observing a wildlife community, the more it is understood. Ideally a complete generation or more of observation is needed prior to understanding trends in a population and this rigor should be applied to raptors.

Single species studies may fail in accurately describing typical behaviour, habitat needs, and foraging, since these conclusions are based in isolation from factors imposed upon them by congeners. A Peregrine Falcon is equally at home in Kenya on a wild cliff top in the semi-arid desert, on cold wet moorlands, or in Nairobi city centre (Thomsett 1988) but the effects imposed by Lanner *Falco biarmicus* and Taita Falcons *Falco fasciinucha* upon them should be considered. There are many examples of single raptor species occupying widely different environments, many of which are man-made and support a small percentage of the original biota. Seen alone, some may be poor 'indicator species'. Seen as an assemblage of multiple species, their biology is better exposed.

In order to validate the generalization regarding the value of raptors as indicators of habitat health, it is advisable to study many species and particularly those that have: 1) specific habitat and food requirements and 2) slow reproduction and maturation rates. Of all the species, eagles are perhaps the best group and they fit the above conditions.

Study location

Eagle Hill, locally known as Kiritiri, in Embu District, Kenya is one of four unexceptional hills rising 457 m (1500 ft) to a summit at 1524 m (5000 ft) within the 378 km^2 study area of the late Leslie Brown. The upper wooded slopes were, and remain gazetted 'protected' forests and the surrounding bush land in the 1950s was rich in wildlife. Black Rhinoceros in particular, were common. Leslie Brown noted as early as 1954 that most of the game which had 'abounded' only six years previously had decreased rapidly (Brown 1956). Eagles survived longer, presumably by adapting to feed on a different and smaller prey base.

Sixty years have elapsed since the first surveys were initiated in 1948 and it is not surprising that the eagle population has decreased. But given that the hill tops remain gazetted as 'forest' it would imply the protection of the eagles. Eagle Hill itself is some 10.8 km^2 and had 6 to 7 breeding eagle pairs, whereas neighbouring hills of 10.6 km^2 and 19.4 km^2 had one pair each (Brown 1956). It is reasonable to assume that the success of the protection afforded to the upper slopes of Eagle Hill could be gauged by the number of nesting eagles found there today.

Results

Table 1. shows the number of nesting pairs of eagles between 1948 and 1979 in a 378 km^2 area of Embu. The data collected during this period and on more recent visits to the site span 46 years.

By 1968 the human population had more than doubled and had destroyed much of the riparian forest and cultivated land that in the 1950s was uninhabited (Brown 1976). Seventeen years after the first census the number of eagles had slightly decreased to 23 pairs of 8 species. Pairs had decreased by 12%, by about 1% per annum. The number of species had declined by 20%.

Within the 17-year period (1951–1968) Brown (1976) speculated that the increase in African Hawk Eagles *Aquila spilogaster* was the result of the increase in people and their poultry. He noted with surprise the decrease of Wahlberg's Eagles *A. wahlbergi*, "The total population and variety of species had altered surprisingly little, despite drastic changes in land use" (Brown 1976).

Table 1. Number of breeding pairs of eagles in 378 km² Embu study site from 1948–1979. Data from Brown 1956, 1976.

Year(s)	Verreaux's	Wahlberg's	African Hawk	Ayres's	Martial	Crowned	Long-Crested	Bateleur	Brown Snake	Af Fish Eagle	pairs/100 km²	Reference
1948–51	1	11	2	1	3	1	1	2	2	2	6.9	Brown 1956
1968	0	7	5	2	3	1	1	3	1	0	6.0	Brown 1976
1978	0	<4	1	1	2	1	0	0	0	0	2.4	ST, L. Brown and P. Davey unpublished data
1979	0	1	2	2	2	0	1	0	0	0	2.2	Jackson *et al.* 1979

Brown (1976) assumed that the loss of stream dwelling/riparian African Fish Eagles *Haliaeetus vocifer* was a direct consequence of wood harvesting. The loss of the last pair of Brown Snake Eagles *Circaetus cinereus* is significant as this species, in the author's experience, appears to be particularly intolerant of human occupation for nesting sites, but can be observed foraging or over-flying areas with moderate human occupation.

The loss of the Verreaux's Eagle *A. verreauxii* was the result of its nest collapsing. Although the species was seen in 1978, the farms had encroached to the base of its cliff nest site making occupancy at that site impossible. Its reappearance, but non breeding, in 1978 illustrates the need to be vigilant in determining the actual breeding status of individuals, and not assume birds seen are resident. Not included in the tables, is the observation that the study area had five pairs of Secretarybirds *Sagittarius serpentarius* in 1950, one pair in 1951 and none in 1952 (Brown 1956). There has been none since.

The Martial Eagle nest sites were on very large trees on inaccessible slopes. They and the African Hawk Eagle are partial to poultry and game birds, which also tend to prosper in some human-degraded landscapes.

In 1978, I accompanied Leslie Brown and Peter Davey on two trips to this site. Thirty years after the first census, nine pairs of five species remained. Pairs had decreased by 75%. The number of species had declined by 50%.

The 1979 survey by the Cambridge Kenyan Eagle Study Expedition acknowledged incomplete coverage of the area. However, they did note, "People were no longer indifferent to the eagles and claimed that the eagles were killing their chickens and because of this the people cut or burnt down nests of some pairs" (Jackson *et al.* 1979). Their study 31 years after the first census counted 8 pairs of 5 species. This represented a 69% decrease in the number of pairs and a 50% decline in the number of species.

These two independent surveys agree well with each other despite using different methods and the 1979 survey did not cover all possible sites. Only the status of the Wahlberg's Eagle is open to question, but the declining trend for the species was consistent in both surveys.

In 1986 another university expedition found only one pair of Martial Eagles (Johnson *et al.* 1986). Although this survey was incomplete, it did verify the existence of one nest, formerly belonging to the single Crowned Eagle pair that collapsed in 1980, being acquisitioned by the Martial Eagle pair. They saw one Wahlberg's Eagle but did not locate a nest. Their data, while inconclusive, suggest a pair decline of 92% or more, and a species decline of 80% or more.

The majority of the loss appears to have happened in as short a period as two to five years between 1977 and 1981. Perhaps significantly, the last known individual Black Rhinoceros on Eagle Hill (and adjacent hills) also vanished in the earlier part of the same period (pers. obs.).

In 1995 I was awarded the Leslie Brown Memorial Grant to help build a library for Gataka Primary School in the foothills; when I went there for that work, between 1995 and 1996, I observed one pair of Martial Eagles in the old Crowned Eagle nest and one pair of Ayres's Hawk Eagle *Aquila ayresii* in the original site. More importantly, I confirmed the extirpation of African Hawk Eagle, Crowned Eagle, Bateleur *Terathopius ecaudatus*, Brown Snake Eagle, and other Martial Eagle and Ayres's Hawk Eagle nests and/or occupation. Eagle density was 0.5/100 km^2.

The status of Wahlberg's Eagle remains an enigma as they appeared to have de-

clined dramatically from 11 pairs to fewer than 5 pairs in 1978, and to one pair in 1979. One Wahlberg's Eagle was seen in 1986, while none was observed in 1995 and only one in 1996. The same loss of Wahlberg's Eagles was noted on the entire route from Nairobi to Embu, with four well known nests near Thika in 1978 having declined to none in 1995. Why this happened is difficult to understand, although the trend is widely observed throughout rural farmed and livestock-rearing parts of Kenya, despite birds' liking for exotic eucalyptus trees.

Meanwhile, the Kamburu Dam, which flooded the former nesting trees of some species, has offered new opportunities for African Fish Eagles with one new nest site in the southern study area.

In 1999, I returned to confirm that the Martial Eagle pair at Kiritiri had gone. Farms had reached the upper slopes and I observed no eagles at all. The raptors I was shown by a Gataka School student were an African Harrier Hawk *Polyboroides typus* and its nest, an African Goshawk *Accipiter tachiro*, and a Great Sparrowhawk *Accipiter melanoleucus* in the mango plantations of the farms.

In 1996 the Martial Eagle pair was not observed and the tall croton trees in which they nested had been severely thinned. The Ayres's Hawk Eagle was not observed either, but the nest tree remained. The Ayres's was observed in 2002, although its breeding status was not verified. No other eagles were observed.

The primary school students informed me of the near total loss of all wildlife on the hill and surroundings, with the loss of all wild ungulates due to poaching. Charcoal burners had denuded the former closed canopy forests on the upper slopes, although some large crotons remained. It is plausible that only the Ayres's Hawk Eagle is capable of remaining in this severely altered environment; rather ironic, as Leslie Brown frequently drew attention to this species as a rarity.

Discussion and Conclusion

The effects of increased human disturbance appeared to exceed a threshold within the large raptor community that led to rapid loss. Stability in the population after the loss is predicted, but not observed, due to the continued rapid loss of habitat. The rapid loss at a certain point during a steady human increase implies an ability by raptors to withstand change, but a sudden collapse once those changes exceed a definable (if theoretical) level. These records suggest a stratified tolerance level among species to anthropogenic disturbance. These conditions may be expected to be duplicated elsewhere in areas with similar human and habitat variables.

Today we are asked to predict the status of raptors and answer complex questions regarding the rate of their decline for IUCN Red Data listings. In the time it takes to acquire the information the status of the species under investigation may have changed. Even if we do understand the biology of the species we must accept that, regionally, raptors and people behave differently. It would be incorrect to suppose that where one prospers it will do so wherever it is found.

Over 48 years, Eagle Hill fell from a place of extraordinary abundance of eagles, 6.9 pairs/100 km^2 , to an area of great paucity, 0.5 pairs/100 km^2 by 1996. The former density of eagles at Eagle Hill was comparable to the density of eagles in two conservation areas in Zimbabwe (Table 2).

Table 2. Comparison of eagle densities in Kenya and Zimbabwe.

Location	One nesting pair per	Source
Eagle Hill, Embu, Kenya	14.5 km^2	Brown 1956
Siabuwa Communal Land, Zimbabwe	31.0 km^2	Hartley 2002
Save Conservancy, Zimbabwe	8.2 km^2	Hartley *et al.* 2002

To have a study group of raptors and document their decline over time is invaluable. Unfortunately it is not possible to add local human variables to the equation as accurate national data do not exist. If it were, it would indicate what we already suspect, but find hard to prove — a catastrophic loss of large and sensitive raptors in areas across Kenya that have undergone a similar transformation. The mechanism that put this catastrophe in place is rural man armed with simple non-mechanized farming implements, accompanied by his livestock. We accept that in the need for food, fuel and protection of crops and domestic animals, wildlife will suffer and decline. What we do not often appreciate is the extent of these losses, down to the very last eagle.

What occurred on Eagle Hill is no different from what has occurred in some 50% to 90% of Kenya in the same time span. Given that less than 10% of Kenya is effectively protected within national parks, reserves and sanctuaries few would argue that man has not used the majority of fertile areas for farming and the dry areas for rearing livestock, resulting in biota impoverishment. The density of livestock inside our protected systems is a major concern that further stresses already impoverished and minimally sized areas. Outdated land policies that neglect to understand that 'idle land' is, by definition, land with the greatest abundance of natural biomass, greatly diminishes appeals made to protect land from overexploitation. As a measure of the changes observed in Kenya, I know of no place, within or outside protected areas, that holds the same density of raptors that Eagle Hill held in the late 1970s.

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Birds of Somalia: new records, range extensions and observations from Somaliland

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Summary

Due to recent political instability and unrest across the Horn of Africa region, Somaliland (the northwest sector of Somalia) is ornithologically little-known. This is despite it being a peaceful and stable state, and its avifauna being summarized in the recently-published *Birds of the Horn of Africa* (Redman *et al.* 2009). We present new information on the ranges and dates of occurrence for 71 species in Somaliland, based on our visit from 17 to 31 May 2010. These include three species not recorded before from Somaliland, namely Von der Decken's Hornbill *Tockus deckeni*, Zitting Cisticola *Cisticola juncidis* and Pale Flycatcher *Bradornis pallidus*.

Introduction

Shortly after independence, in 1960, the former colonial regions of British Somaliland and Italian Somaliland were amalgamated into a single country called the Somali Republic (hereafter Somalia), with its capital as Muqdisho. Following the breakdown of governance of Somalia in 1991, a prolonged and on-going period of conflict ensued in the previous Italian sector of the country (hereafter southern Somalia), making the Horn of Africa region unsafe and consequently little-visited. The previously-British territory located in the northwest of Somalia (hereafter Somaliland) declared independence from Somalia in that same year and is now relatively peaceful and stable, with its own government, capital (Hargeysa) and democratic election process that saw a peaceful change of presidential power in 2010. Although not internationally recognized as being independent from Somalia, Somaliland operates as an independent state, and this stability has allowed the first recent visits by ornithologists and birders.

Prior to the onset of civil unrest in the 1990s, numerous ornithological visits to Somalia resulted in the culmination of Ash & Miskell's (1998) comprehensive atlas *Birds of Somalia* and contributed to the excellent new field guide *Birds of the Horn of Africa* (Redman *et al.* 2009). However, our two-week-long visit to Somaliland in 2010 revealed that even during such a short period it was possible to add substantially to the knowledge of this region. Here we present our general findings, which include new records, range extensions, new dates of observation for migratory species and observations of rare species. We have already highlighted the endemic and range-restricted avifauna and birding potential of Somaliland (Cohen *et al.* 2011) and are preparing a manuscript describing vocalizations of birds from the region (Mills & Cohen, in prep.).

For consistency, we discuss our findings with direct reference to Ash & Miskell (1998), using the same half-degree grid square naming procedure (a number and let-

ter, emboldened in the text; Fig. 1) and all discussion herein is with reference to Ash & Miskell (1998) unless otherwise stated. We also follow the species order of Ash & Miskell (1998), although we use the more updated taxonomy and nomenclature of Gill & Donkster (2008). Wherever possible we use the 'modern Somali' place names of locations as given in Ash & Miskell (1998), although not all sites that we visited are listed in their gazetteer; these sites are accompanied by geographic co-ordinates and altitude on first mention.

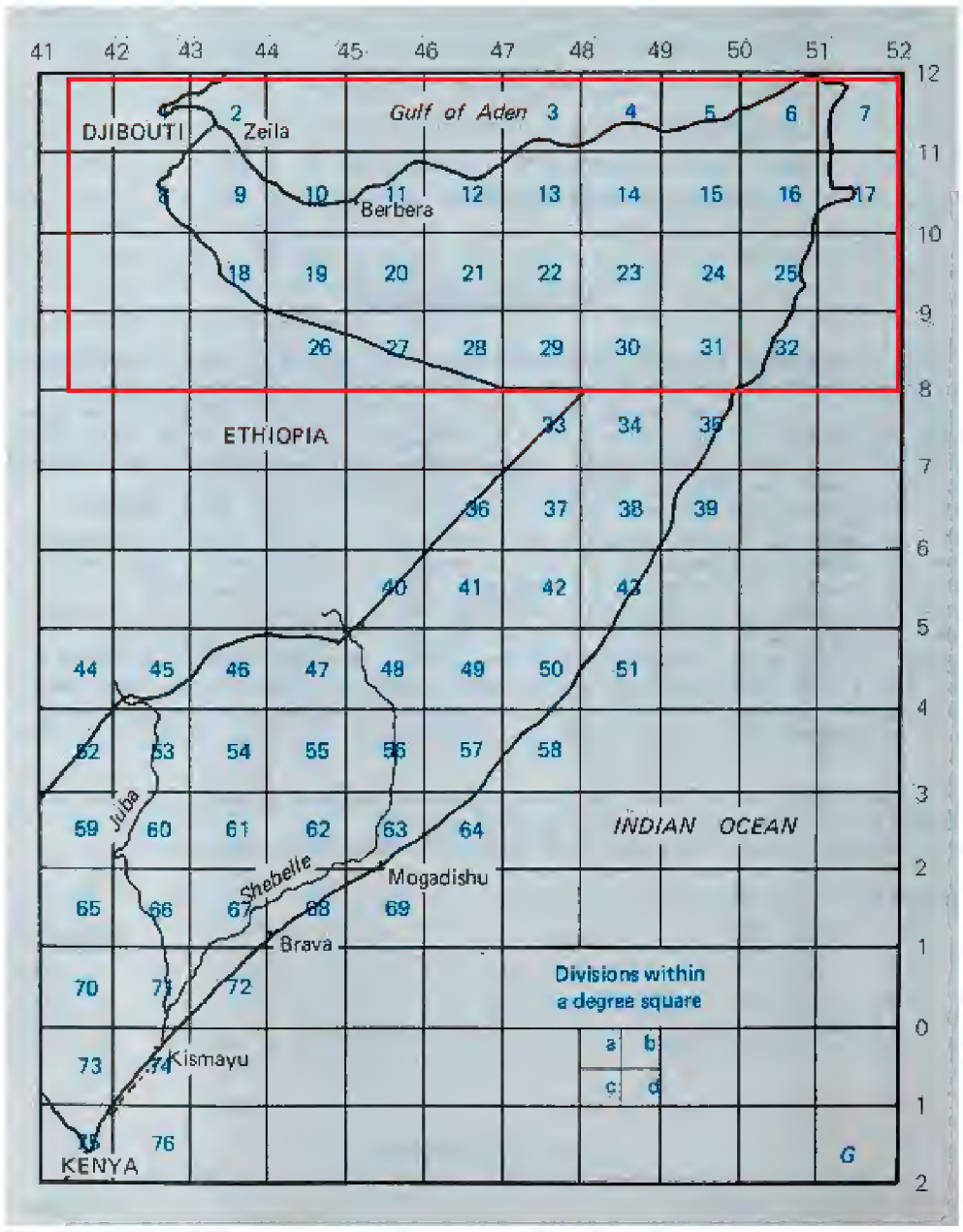

Figure 1. Map of Somalia showing the half degree grid system, reproduced from Ash & Miskell 1983. The area of study is highlighted within the red rectangle.

Our visit to Somaliland from 17 to 31 May 2010 coincided with the main rains and peak bird breeding season (Ash & Miskell 1998). We entered Somaliland overland from Djibouti, crossing the border at Lawyado (11.460° N, 43.258° E, 5 m; 2c) on 17 May and travelling along the coast to Saylac (2c). From here we travelled inland, south and east to Hargeysa (19a) on 18 May, crossing the Geriyaad plains (9c) en route and climbing up to the plateau. After this we first made a detour westwards to the plains surrounding the Ethiopian-border town of Tog Wajaale (18a), on 19 May. From Hargeysa we headed north-east on 20 May for c. 50 km to some rocky hills here called 'Beira Hills' (9.74° N, 44.50° E, 1150 m; 20b) before continuing east to Burco (20b). From Burco we travelled northeast to Ceerigaabo (13a) and the escarpment at Daalo (13a) on 21 to 22 May, crossing en route the Ban Cade plains (9.52° N, 46.98° E, 795 m; 21b) near Garadag (21d). At Daalo (23–24 May) we visited various sites along the top of the escarpment and travelled down the escarpment and on to the coastal plain

towards Maydh (3c), but turned *c.* 22 km southeast of Maydh at 10.895° N, 47.286° E (320 m; 13a). From Daalo/Ceerigaabo we retraced our steps to Burco on 25 May, before detouring to the southeast towards the Buuhoodle (28c) area on the Ethiopian border (26–27 May). We turned *c.* 40 km north of Buuhoodle, and observed birds for 24 h on the red sands 10–25 km north of Qorulugad (8.55° N, 46.23° E, 840 m; 28a). The final section of our journey saw us return to Burco and on 28 May visit the Aroori plains (20c), about 25 km to the southwest of Burco, before continuing to Berbera (11c) and Hargeysa, pausing *c.* 17 km southeast of Berbera near Busti (11c). On 29 and 30 May we again visited the plains of Tog Wajaale (18a) to search for Archer's Lark *Heteromirafra archeri* (Spottiswoode *et al.* 2013, Mills *et al.* in prep.). Finally, on 31 May we visited the Qorladey plains (9.13° N, 44.18° E, 1 200 m; 19c) *c.* 50 km to the south of Hargeysa, before returning to Djibouti by air.

Notes on species

Somali Ostrich *Struthio molybdophanes*

One female was seen on the Geriyaad plains (9c) on 18 May, a new square within the previously-known range.

African Spoonbill *Platalea alba*

Two were seen at a wetland near Tog Wajaale (18a) on 29 May, a new square, with the only other record from Somaliland from 19a. However, it is common in southern Somalia.

Black-winged Kite *Elanus caeruleus*

One was seen in the Qorulugad (28a) area on 27 May, a new square and the furthest east record for Somaliland, the nearest record coming from the northwest of this in square 20c. This appears to be the first record for May, anywhere in Somalia.

Scissor-tailed Kite *Chelictinia riocourii*

Two were seen on the plains *c.* 5 km south-west of Ceel Afweyn (22a) on 25 May, a new square.

Short-toed Snake Eagle *Circaetus gallicus*

One was seen and photographed near Busti (11c) on 28 May, and constitutes a new record for Somalia (Cohen *et al.* in prep.). It has been recorded subsequently (N. Borrow, *in litt.*; N. Redman, *in litt.*).

Black-chested Snake Eagle *Circaetus pectoralis*

One was seen *c.* 47 km north-east of Garadag in square 22a on 22 May, a new square.

Bonelli's Eagle *Aquila fasciata*

A pair was observed and photographed at Daalo in square 13a on 22 May, a new record for Somalia (Cohen *et al.* in prep.).

Gabar Goshawk *Micronisus gabar*

One was seen in the Qorulugad (28a) area on 27 May, a new square although it had been recorded immediately to the south (28b).

Greater Kestrel *Falco rupicoloides*

One was seen on the Ban Cade plains (21b) near Garadag on 22 May, a new square, although it had been recorded in adjacent squares to the east (22a) and south (21d).

Sooty Falcon *Falco concolor*
One perched bird was seen c. 9 km south-west of Burco in square 20c on 21 May. Only the 14th record for Somalia and the 10th for Somaliland.

Eurasian Hobby *Falco subbuteo*
One was photographed in the Daalo area (13a) on 23 May, a new square.

Orange River Francolin *Scleroptila levaillantoides lorti*
These rare francolins were recorded on two consecutive days (22–23 May) near Daalo (13a). This taxon is confined to Somaliland and adjacent northeast Ethiopia (Ash & Atkins 2009).

Yellow-necked Spurfowl *Pternistis leucoscepus*
A few were seen in the Qorulugad (28a) area on 26 and 27 May, a new square, although recorded from the adjacent squares to the south (28b) and east (28c).

Kittlitz's Plover *Charadrius pecuarius*
Two were seen on the plains near Tog Wajaale (18a) on 19 May. This constitutes the first inland record for Somaliland and a new square, and only the fourth record for Somaliland, although it is common in southern Somalia.

Caspian Plover *Charadrius asiaticus*
One was seen on the plains near Tog Wajaale (18a) on 19 May. This is apparently the first record from May, although there is a single June record.

Spur-winged Lapwing *Vanellus spinosus*
Birds were seen along the coast near Saylac (2c) on 17 May and in the Tog Wajaale area (18a) on 19 May. The first record is new for the square, and these constitute the seventh and eight records for Somaliland.

Black-winged Lapwing *Vanellus melanopterus*
A total of at least 10 birds was seen on the plains near Tog Wajaale (18a) on 19, 29 and 30 May, and another one was seen on the Qorladey plains (19c) on 31 May. This is a rare bird in Somaliland, with only three previous records. The last record is new for the square.

Emerald-spotted Wood Dove *Turtur chalcospilos*
At least one bird was heard below Daalo (13a) on 23 May, a new square for the species.

Mourning Collared Dove *Streptopelia decipiens*
We saw and heard several in the area surround Burco (20b) on 20 and 28 May, a new square for the species and east of the previous range.

Red-bellied Parrot *Poicephalus rufiventris*
Recorded on both 26 and 27 May in the Qorulugad (28a) area, a new square, although recorded in the adjacent square to the northwest (20d).

White-bellied Go-away-bird *Corythaixoides leucogaster*
A few were seen in the Qorulugad (28a) area on 26 and 27 May, a new square, although recorded immediately to the north (21c) and northwest (20d).

Jacobin Cuckoo *Clamator jacobinus*
Recorded in the Qorulugad (28a) area on both 26 and 27 May, a new square (28a), although recorded from the square to the east (28b).

Diederik Cuckoo *Chrysococcyx caprius*
Its distinctive call was heard in the Qorulugad (28a) area on 27 May, a new square although recorded from the square to the east (28b).

Pearl-spotted Owlet *Glaucidium perlatum*
Two were seen in a termite mound in the Qorulugad (28a) area on 26 May, in addition to similar sightings of Little Owl *Athene noctua* in the same area. This is a new square for the species, previously recorded only further west in Somaliland.

Little Owl *Athene noctua*
Two were seen along the roadside *c.* 15 km south-west of Ceerigaabo (13a) on 22 May and still in the same square as Ceerigaabo. This is a new square for the species.

Donaldson Smith's Nightjar *Caprimulgus donaldsoni*
Seen and heard in the Qorulugad (28a) area on 26 and 27 May. This is a new square, although recorded from the square to the south (28c).

White-rumped Swift *Apus caffer*
One was seen near Daalo (13a) on 22 May, a new square to the west of the previous two records in Somaliland. This constitutes only the third record for Somaliland and the eighth for Somalia.

Blue-naped Mousebird *Urocolius macrourus*
The distinctive call was heard in the Tog Wajaale (18a) area on 19 May, a new square, although previously recorded from those immediatly east (18b) and south (18c).

Narina Trogon *Apaloderma narina*
One was heard calling from a forested gorge on the Daalo escarpment (13a) on 23 May, a new square, although it had previously been recorded from the escarpment to the west and east of here. It is rare in Somaliland.

Little Bee-eater *Merops pusillus*
A couple were seen in the Qorulugad (28a) area on 26 May, a new square.

Blue-cheeked Bee-eater *Merops persicus*
A group of *c.* 10 birds was seen on 18 May near Saylac. This record comes from marginally outside of the period 26 April–12 May reported for Somaliland.

European Roller *Coracias garrulus*
Two were seen flying over the plains near Tog Wajaale (18a) on 19 May, slightly outside the northward passage dates of 17 April to 14 May.

Von der Decken's Hornbill *Tockus deckeni*
One was seen in the Qorulugad (28a) area on 27 May, perhaps the first record for Somaliland and a long way west of the only other records in northern Somalia. It is, however, widespread in southern Somalia.

Somali Lark *Mirafra somalica*
Seen at various places from *c.* 17–43 km north-east of Garadag in squares 21b and 22a on 22 May, both new squares for the species but from within the known range.

Blanford's Lark *Calandrella blanfordi*
A few were seen on the Qorladey plains (19c) on 31 May, a new square and the furthest west record to date.

Thekla Lark *Galerida theklae*
At least one was seen and heard on the Ban Cade plains (21b) on 22 May, a new square for the species.

Golden Pipit *Tmetothylacus tenellus*
At least four full-plumaged males were seen on the Qorladey plains (19c) on 31 May, a new square.

Tawny Pipit *Anthus campestris*
Large numbers (probably more than 30) were seen in display on the plains *c.* 5 km southwest of Ceel Afweyn (22a) on 25 May, a new square for the species, and on the Qorladey plains (19c) on 31 May. These records suggesting that the species is a regular and widespread breeder, with display activity previously overlooked.

White-browed Scrub Robin *Erythropygia leucophrys*
Common in the Qorulugad (28a) area on 26 May and 27 May; a new square for the species, although recorded previously from the square to the east (28b).

Rufous-tailed Scrub Robin *Erythropygia galactotes*
A bird was observed in full song below the Daalo escarpment at *c.* 330 m altitude (13a) on 24 May, which constitutes a new square within the previously-documented range.

Somali Wheatear *Oenanthe phillipsi*
Seen on both 26 and 27 May in the Qorulugad (28a) area, a new square for the species, although recorded immediately to the north (21c) and east (28b).

Red-breasted Wheatear *Oenanthe bottae*
One was seen and photographed on the plains just to the west of Tog Wajaale (18a) on 19 May, a new record for Somalia (Cohen & Mills, in prep.)

Blackstart *Oenanthe melanura*
One was active around a deep erosion gully on the Ban Cade plains (21b) on 22 May, a new square.

Sedge Warbler *Acrocephalus schoenobaenus*
One was seen in a small wetland en route from Hargeisa to Tog Wajaale, *c.* 2 km east of Gabiley (18b) on 19 May, a new square, although recorded immediately to the west (18a). There are few records, with only 20 previouly for Somalia.

Zitting Cisticola *Cisticola juncidis*
Four and then one were recorded (heard and seen) on the plains near Tog Wajaale (18a) on 19 and 29 May, respectively, and at least one other was seen on the Qorladey plains (19c) on 31 May, alongside Desert Cisticola *Cisticola aridulus.* These appear to be the first records for Somaliland, although the species has been recorded in southern Somalia along the Webi Shabeelle River (N. Borrow, *in litt.*; N. Redman, *in litt.*).

Desert Cisticola *Cisticola aridulus*
This species was heard in display on the plains *c.* 5 km southeast of Ceel Afweyn (22a) on 25 May and seen and heard on the Qorladey plains (19c) on 31 May. Both squares are new for the species.

Yellow-breasted Apalis *Apalis flavida viridiceps*
At least six birds were seen in the Qorulugad (28a) area on 26 and 27 May, a new square for the species.

Grey Wren-Warbler *Calamonastes simplex*
The species was quite vocal in the Qorulugad (28a) area on 26 and 27 May, where at least four were also seen. This is a new square, although it has been recorded immediately to the north (21c) and east (28b).

Yellow-vented Eremomela *Eremomela flavicrissalis*
Four were seen in dense thickets in the Qorulugad (28a) area on 27 May, a new square for the species, although it had been recorded immediately to the south (28c).

Northern Crombec *Sylvietta brachyura*
Two singles were seen in bush on the escarpment in the Daalo area (13a) on 23 and 24 May; this is a new square for the species.

Philippa's Crombec *Sylvietta philippae*
We had two different sightings totalling four birds *c.* 13–14 km east of Inaafmadow (9.148° N, 45.950° E, 870 m) in square 21a, a new square for the species. It was previously recorded from only three other squares in Somaliland.

Arabian Warbler *Sylvia leucomelaena*
Two were seen in the Qorulugad (28a) area on 27 May, a new square for the species, although it has been recorded immediately to the north (21c).

Pale Flycatcher *Bradornis pallidus*
In the Qorulugad (28a) area on 27 May we found several of these birds. This constitutes a new record for the country with all previous records coming from the south of Somalia. In order to rule out other species of flycatcher, we exhibit a recording of the vocalizations made by these birds, which can be downloaded from www.birdsangola.org/downloads or requested from the authors via email. Further details will be published elsewhere (Cohen & Mills, in prep.)

Pygmy Batis *Batis perkeo*
Two were seen and heard in the Qorulugad (28a) area on 27 May; a new square for the species, although it had been recorded immediately to the east (28b). This is only the second square in Somaliland from which it has been recorded.

Scaly Chatterer *Turdoides aylmeri*
Two groups totalling at least 8 birds were found in the Qorulugad (28a) area on 27 May; a new square for the species, although had been recorded immediately to the northwest (20d).

Acacia Tit *Parus thruppi*
One bird was seen and later heard in the Daalo area (13a) on 23 and 24 May, a new square within the known range.

Mouse-coloured Penduline Tit *Anthoscopus musculus*
One was seen in the Qorulugad (28a) area on 27 May; a new square, although it had been recorded immediately to the south (28c). There are only 22 previous records for Somalia.

Red-naped Bushshrike *Laniarius ruficeps*
This species was quite vocal in the Qorulugad (28a) area on 27 May; a new square for the species, which had previously been recorded in Somaliland only from squares 20a, 20b and 20c.

House Crow *Corvus splendens*
This introduced species was abundant along the coast in the Saylac area (2c) on 17 and 18 May and was also seen around Berbera (11c) on 28 May. It must have become more widespread in the last 15 years, since it appears to have been recorded previously only once at Berbera (11c) in 1988 and once at Raas Ceseyr (7a) in 1950.

Wattled Starling *Creatophora cinerea*
A flock was seen on the Qorladey plains (19c) on 31 May, a new square for the species within its previously-documented range.

Nile Valley Sunbird *Hedydipna metallica*
More than 10 birds, including males, were seen below the Daalo escarpment at *c.* 330m altitude (13a) on 24 May, which constitutes a new square. This lies midway between the two previously-documented areas of occurrence in the north, suggesting that it probably occurs along the entire northern coast.

Hunter's Sunbird *Chalcomitra hunteri*
One full-plumage male was seen in the Qorulugad (28a) area on 27 May, a new square for the species, although it had been recorded to the immediate north (21c), east (28b) and south (28c).

Marico Sunbird *Cinnyris mariquensis*
Two were seen in the Qorulugad (28a) area on 26 May, a new square for the species, although it had been recorded to the immediate south (28c).

Lesser Masked Weaver *Ploceus intermedius*
About eight birds were seen around their nests in our hotel grounds in Burco (20b) on 21 May, a new square for the species. Apparently there are only 10 previous records from Somaliland.

Red-billed Quelea *Quelea quelea*
A flock was seen on the Qorladey plains (19c) on 31 May, a new square for the species, although it had been previously recorded to the immediate north (19a) and west (18d).

Swainson's Sparrow *Passer swainsonii*
Several were seen in the Qorulugad (28a) area on 26 and 27 May, a new square for this widespread species which had been recorded from the square immediately north (21c).

Somali Sparrow *Passer castanopterus*
One was active and vocal around a deep erosion gulley on the Ban Cade plains (21b) on 22 May, a new square within the previously-documented range.

Yellow-spotted Petronia *Gymnoris pyrgita*
A few were seen in the Qorulugad (28a) area on 26 and 27 May, a new square for the species, although it had been recorded to the immediate north (21c), east (28b) and south (28c).

Green-winged Pytilia *Pytilia melba*
Two were seen in the Qorulugad (28a) area on 27 May, a new square for the species, although it had been recorded to the immediate north (21c), east (28b) and south (28c).

Black-cheeked Waxbill *Estrilda charmosyna*

One was seen in the Qorulugad (28a) area on 27 May, a long way east of all previous records in Somaliland. It appears to be rare, with only 20 previous records for Somalia.

Northern Grosbeak-Canary *Crithagra donaldsoni*

At least four males were singing in the Qorulugad (28a) area on 27 May. This species appears to be quite rare in Somalia, with only 25 previous records.

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Understorey bird abundance and diversity before and after a forest fire in Mangala Forest Reserve on the eastern slopes of the Uluguru Mountains, Tanzania

Chacha Werema

Summary

In July 2010 an assessment of abundance and diversity of understorey birds was undertaken in Mangala Forest using mist netting. However, in October 2010 a non-intentional fire burned the entire forest and this event provided a good opportunity to assess the extent to which birds were affected. Assessment, using mist netting, was carried out one week, three months and eight months after the fire, and comparisons made with data obtained before the forest was burned. In total, 28 species were recorded. Of these, the number recorded before the fire, one week post-fire, three months post-fire and eight months post-fire was 22, 3, 3 and 11 species respectively. The understorey bird species diversity before the forest was burned was substantially higher than diversities found afterwards. The results confirm that forest burning can have a severe negative impact on bird abundance and species richness and should be halted. Because fires start from the surrounding farmland, there is a need to construct and maintain fire breaks around entire forests.

Introduction

Fire is one of the major disturbance agents in forest ecosystems (Kreisel & Stein 1999). It is among the major threats facing most of the forest reserves and national parks in Tanzania. In the Eastern Arc Mountains, it is among the main causes of loss and fragmentation of the forests (Newmark 1998) and has been identified as the primary threat facing their long term survival. Fires can start outside the forest in preparation of land for agriculture (Svensen & Hansen 1995, Werema, 2014) but can also be started by forest user groups such as loggers, charcoal burners and hunters (Burgess *et al.* 2005). In the Uluguru Mountains, fires are particularly frequent in the foothill woodlands (Svendsen & Hansen 1995, Werema 2014). They result in tremendous destruction of the vegetation each year (Lulandala 1998), particularly the understorey layer and canopy cover.

In the Eastern Arc Mountains, the effects of forest fires on avifauna, especially on forest interior bird species, have received little attention. In the Ulugurus the author has reported the negative affects of fire on understorey forest birds in the lower altitude Kimboza Forest Reserve (Werema 2014), but is aware of no other direct comparisons of forest bird abundance and diversity before and after fire.

The original objective of a study in Mangala Forest, which began in July 2010, was to compare the diversity of understorey birds between cold and hot seasons. However, in October 2010, a fire that spread from surrounding agricultural land completely burned the entire forest reserve. This provided a good opportunity to

assess the extent to which birds were affected. This paper presents and discusses the findings from a mist netting study of understorey birds from before and up to eight months after the forest was burned. The main focus was on understorey birds, which are good indicators of disturbance in tropical forests (Newmark 1991).

Materials and methods

Location

Mangala Forest Reserve is located in the eastern part of the Uluguru Mountains, Tanzania (06°58′ S, 37°45.5′ E, Fig. 1). The Ulugurus form one of the component blocks of the Eastern Arc Mountains and rank second among these in their number of endemic vertebrate and plant species (Burgess *et al.* 2002, Rovero *et al.* 2014). Mangala Forest Reserve was gazetted in 1914 with 35 ha, but due to encroachment its current size is 28.5 ha. The forest covers Mangala Hill between 420 m and 640 m above sea level. The reserve is owned by local government and is currently under Participatory Forest Management in which adjacent communities (villages) are involved. The southern and western parts are very steep compared to the northern and eastern slopes (Fig. 1). At the top of the hill on the northern side the greater part is bracken *Pteridium aquilinum* and a few trees, especially *Julbernardia globiflora* and *Brachystegia spiciformis*. The closed forest is found on the western and eastern sides, where the dominant trees are *Tabernaemontana pachysiphon*, *Bombax rhodognaphalon*, *Khaya anthotheca*, *Newtonia buchananii*, *Terminalia brownii*, *Albizia gummifera* and *Sorindeia madagascariensis*. The coolest months are from May to September.

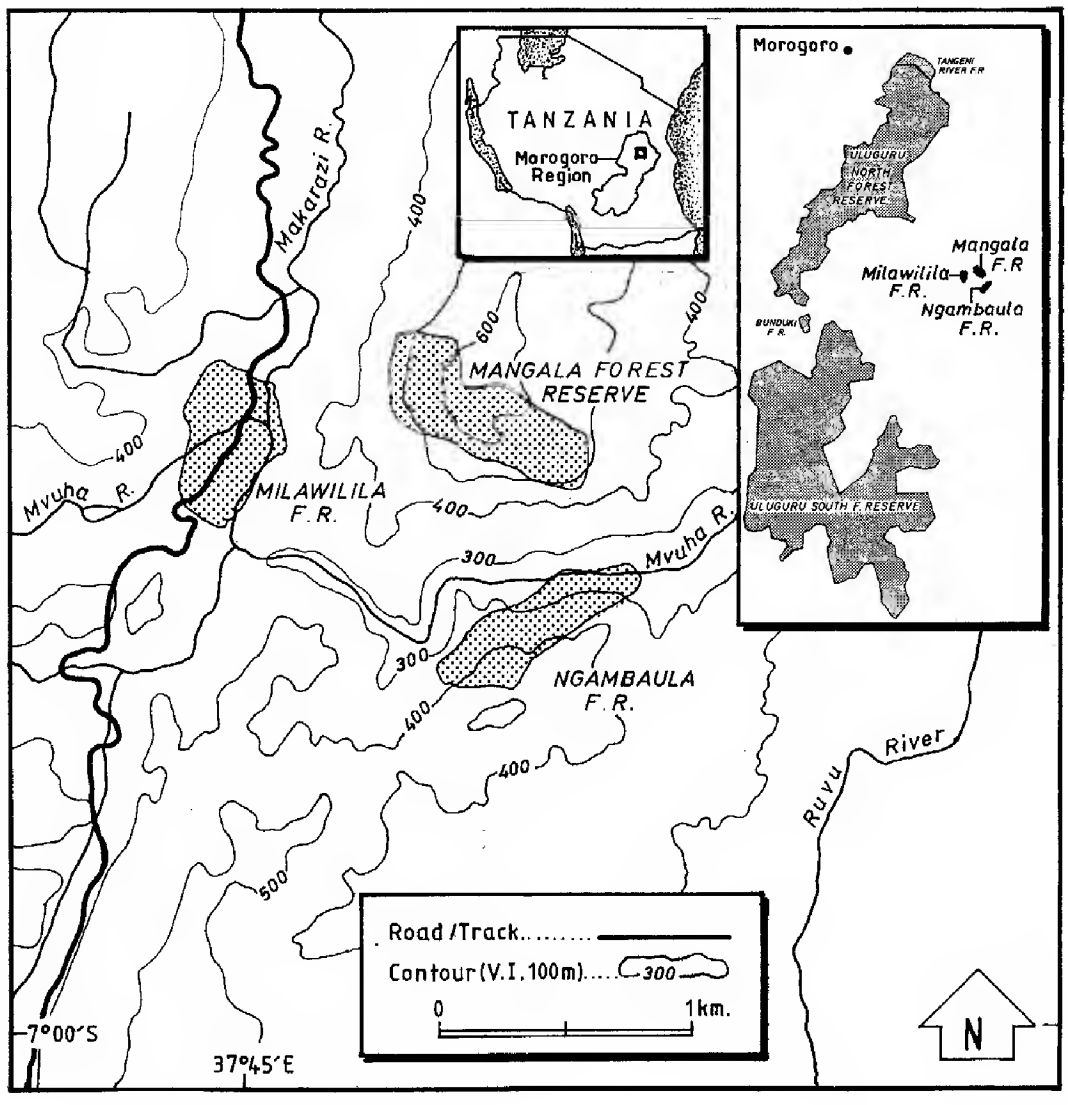

Figure 1. Location of Mangala Forest Reserve in the eastern foothills of Uluguru Mountains, Tanzania.

Methods

In October 2010, a non-intentional fire spread from the farms surrounding Mangala Forest Reserve and burned all 28.5 ha of the reserve area. The understorey birds had already been surveyed in July 2010, prior to the fire. Fifteen mist nets, each 12 m long and 2.6 m high, with 4 shelves and a 16 mm mesh size, were set, from the edge towards the middle of the forest, for three consecutive days. After the fire mist nets were set in the same locations with the same sampling effort maintained. Three sessions were conducted, one week post-fire (in October 2010), three months post-fire (in January 2011) and eight months post-fire (in July 2011). In each session, one day was used to clear lines and set the nets. The following three days (36 daylight hours) were used to run the nets (6480 metre-net hours each visit). They were checked every hour but more frequently during the morning and evening, and were closed during the night. The general habitat characteristics, including the understorey and overstorey cover, were noted each visit.

Data analysis

Because mist nets were used to sample birds it implies that only species that forage in the understorey were surveyed. Understorey birds were divided into three groups: forest-dependent species (FF species), forest generalists (F species) and forest visitors (f species) (Stuart & Jensen 1985, Newmark 1991, Bennun *et al.* 1996). FF species (forest specialists) are 'true' forest birds of the interior undisturbed forest and F species are those which can occur in undisturbed forest but are most often found in forest strips, gaps and edges. Forest visitors (f species) are birds that can be recorded in forest but are not dependent on it. To assess the impact of the fire, the bird species diversity and abundance before the burn event was compared with data obtained one week, three months and eight months afterwards. For each session, species diversities were computed using the Shannon-Wiener diversity index. Comparisons of Shannon-Wiener diversities were performed using a t-test described by Hutcheson (1970).

Abundance data were assessed to determine whether they were normally distributed (Shapiro & Wilk 1965). A Kruskal-Wallis test was used because the data were not normally distributed. All statistical tests and comparisons were computed using a software package: PAST (Hammer *et al.* 2001). Throughout this paper bird nomenclature follows Stuart & Jensen (1985).

Results

Habitat characteristics

Before the fire the forest had closed understorey and overstorey layers. After the fire, all seedlings and saplings in the shrub layer were killed, creating an open forest floor with dead saplings in the understorey layer. The leaf litter was completely burned. Shrub mortality was apparent in the entire forest. The canopy formed from large and tall trees 20–30 m high was incompletely burned. Three months post-fire, the understorey began to recover after the short rains in December 2010. This recovery continued such that 8 months post-fire there were more seedlings and saplings. The overstorey recovered quickly after the short rains.

Bird abundance and diversity

In total, 108 individuals of 28 species were netted (Table 1). Half these captures (50%) were made in the pre-fire session, followed by 31.5% eight months post-fire.

Only 6% and 13% respectively were contributed by the sessions one week and three months post-fire (Table 1). There was a highly significant difference in the number of individuals mist netted among sampling sessions (KW = 25.27, $df = 3$, $p < 0.001$). Numbers of species mist netted pre-fire, one week post-fire, three months post-fire and eight months post-fire were 22, 3, 3 and 11 respectively (Table 1). Species diversity was significantly higher before the fire than in any post-fire sampling session (Tables 1 & 2). None of the FF species was caught one week or three-months post-fire (Table 3) and less than half were caught eight months post-fire.

Table 1. Birds mist netted at Mangala Forest. FD = forest dependency: *FF* = Forest-dependent species, *F* = Forest generalists and *f* = forest visitors.

FD	Species	Pre-fire	One week post-fire	Three months post-fire	Eight Months post-fire
F	Lemon Dove *Aplopelia larvata*	1	0	0	0
FF	Tambourine Dove *Turtur tympanistria*	0	0	0	5
FF	Bar-tailed Trogon *Apaloderma vittatum*	1	0	0	3
f	Brown-hooded Kingfisher *Halcyon albiventris*	0	0	1	0
F	Pygmy Kingfisher *Ispidina picta*	1	0	0	0
FF	African Broadbill *Smithornis capensis*	1	0	0	1
FF	Pale-breasted Illadopsis *Illadopsis rufipennis*	1	0	0	0
FF	Shelley's Greenbul *Andropadus masukuensis*	1	0	0	0
FF	Stripe-cheeked Greenbul *Andropadus milanjensis*	4	0	0	1
F	Little Greenbul *Andropadus virens*	11	0	0	0
F	Grey-olive Greenbul *Phyllastrephus cerviniventris*	1	0	3	2
FF	Yellow-streaked Greenbul *Phyllastrephus flavostriatus*	4	0	0	0
FF	White-chested Alethe *Alethe fuelleborni*	7	0	0	5
f	Bearded Scrub Robin *Cercotrichas quadrivirgata*	0	0	0	1
f	White-browed Robin Chat *Cossypha heuglini*	1	0	0	0
FF	White-starred Robin *Pogonocichla stellata*	2	0	0	5
FF	Sharpe's Akalat *Sheppardia sharpei*	1	0	0	0
FF	Orange Ground Thrush *Zoothera gurneyi*	5	0	0	0
FF	Forest Batis *Batis mixta*	1	0	0	0
F	African Paradise Flycatcher *Terpsiphone viridis*	1	0	0	1
FF	Blue-mantled Crested Flycatcher *Trochocercus cyanomelas*	2	0	0	0
FF	Square-tailed Drongo *Dicrurus ludwigii*	1	0	0	0
F	Collared Sunbird *Anthreptes collaris*	0	1	0	0
F	Olive Sunbird *Nectarinia olivacea*	3	1	10	0
FF	Dark-backed Weaver *Ploceus bicolor*	1	0	0	0
F	Peters's Twinspot *Hypargos niveoguttatus*	3	0	0	1
F	Green-backed Twinspot *Mandingoa nitidula*	0	0	0	9
f	Bronze Mannikin *Lonchura cucullata*	0	4	0	0
	Total number of individuals	54	6	14	34
	Total number of species	22	3	3	11
	Species diversity (Shannon-Wiener index)	2.720	0.868	0.759	2.097

Table 2. Comparisons of species diversities between pre- and post-fire mist netting sessions.

Comparison	t-value	*df*	*p* value
Pre-fire vs one week post-fire	t = 5.349	8.27	< 0.001
Pre-fire vs three months post-fire	t = 7.567	26.97	< 0.001
Pre-fire vs eight months post-fire	t = 3.002	81.26	< 0.001

Table 3. Effect of fire on species richness in each forest dependency category.

Sampling session	*FF* species	*F* species	*f* species	Total
Pre-fire	14	7	1	22
One week post-fire	0	2	1	3
Three months post-fire	0	1	2	3
Eight months post-fire	6	4	1	11

Discussion

The results show that understorey bird species diversity was significantly higher before the forest was burned than in any of the post-fire periods. This can be attributed to the creation of an open understorey layer. This agrees with the findings of Slik & Van Balen (2006) in Borneo, Indonesia, and Lee *et al.* (2011) in South Korea, who concluded that decreased bird species diversities after fire were probably the result of the understorey layer becoming too open to support forest-dependent species. At Mangala, the open understorey layer apparently inhibited use by forest-dependent species one week and three months post-fire. Similar results have been reported by Barlow *et al.* (2002) in the Amazonian forests of Brazil, and also by Werema (2014) in the lower altitude Kimboza Forest Reserve, eastern Tanzania. Barlow *et al.* (2002) and Werema (2014) found that the number of captures per unit mist netting effort was significantly reduced in burnt compared to unburnt forest, and attributed this to changes in the composition and physiognomic structure of the vegetation community.

Contrary to the findings of this study, Adeney *et al.* (2006) found an increase in bird species richness after fire in Sumatran forests. They attributed this to the fact that birds of the open fields tended to replace interior forest specialists. At Mangala, this could explain the presence of Brown-hooded Kingfisher *Halcyon albiventris*, Eastern Bearded Scrub-Robin *Cercotrichas quadrivirgata* and Bronze Mannikin *Lonchura cuculata* in the forest eight months after the fire. While reducing suitability for forest-dependent understorey species fire disturbance can create new microhabitats for non-forest species. In general, however, the findings of this forest study are opposite to some of those from grasslands and woodlands where fire has led to an increase in bird species richness (Nkwabi *et al.* 2011, O'Reilly *et al.* 2006).

The increase in abundance and diversity of understorey birds eight months after the forest was burned compared to values one week and three months post-fire show that some of the species concerned are able to perform local movements and reuse the forest after only partial recovery from disturbance. Similar mobility is shown by forest species known to make seasonal altitudinal movements (Burgess & Mlingwa 2000). The presence of Bar-tailed Trogon *Apaloderma vittatum*, Stripe-cheeked Greenbul *Andropadus milanjensis*, White-chested Alethe *Alethe fuelleborni* and White-starred Forest Robin *Pogonocichla stellata* in Mangala Forest eight months post-fire could have represented short cold season visits since these species are known to make seasonal altitudinal movements (Burgess & Mlingwa 2000.). However, the pre-fire and eight months post-fire sampling sessions were conducted during the same month of the

year (i.e., July) in subsequent years and provide a comparison independent of any seasonal movements. They clearly show a decrease in bird abundance and diversity after the fire during the same cold season.

Conclusion and recommendation

Forest fires have negative impacts on the diversity of understorey forest birds. Conservation interventions are necessary and measures against forest fires are needed. There is a need to construct and maintain fire breaks around entire forests. This has been found to be effective against fires in some of the Eastern Arc Mountains forests. It is hoped that this study will spur others to follow effects on understorey forest avifauna for several years after a forest fire. Longer term studies are needed to determine the trajectory of the response of these bird communities to forest fires in East Africa.

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Short communications

Red-billed Hornbill *Tockus erythrorhynchus* breeding in a hollow brickstone wall

Red-billed Hornbills *Tockus erythrorhynchus* usually choose natural cavities, woodpecker or barbet holes in trees, and even bee-hive logs as breeding sites (Williams 1978, Kemp 1995, 2001, Poonswad *et al.* 2013). Although some hornbill species, including the Red-billed, accept artificial nestboxes in trees (Diop & Tréca 1993, 1996, Kemp 2001), to our knowledge breeding in man-made buildings has not yet been reported for Red-billed Hornbills.

During a trip to southern Ethiopia on 13 May 2012 we found a nest of a Red-billed Hornbill in a large hollow brick of an unplastered wall of a small outbuilding in a hospital area in the town of Dida Hara, Oromia Regional State (4°48′39′′N, 38°19′33′′E). The entrance hole was situated at a height of about 80 cm on the outer side of the wall (Fig. 1a) and was sealed in the typical manner of hornbills, leaving a small slit of approximately 6 x 2.5 cm (Fig. 1b). Apparently, the nest was occupied with a breeding female of which we could see the bill tip when standing close to the wall. A feeding male approached several times with various food items, predominantly locusts (among them slant-faced grasshoppers Acridinae and bush-crickets Phaneropterinae; Fig. 1c, d). We could not find out if young had already hatched.

Figure 1. a) Nesting site of the Red-billed Hornbill *Tockus erythrorhynchus* in a hollow brick stone wall of the small building on the left, the fence on the right was used by the male for perching before approaching the nest; b) sealed entrance slit of the nest in a hollow brick stone, the female's bill tip can be seen; c) the male waiting to approach the nest, carrying a slant-faced grasshopper (Acridinae); d) the male clings to the wall while feeding the female (Photos: K. Gedeon; Dida Hara, Oromia Regional State, Ethiopia, 13 May 2012).

Since the ongoing deforestation of Ethiopian savanna habitats causes further loss of natural breeding cavities in trees, it appears likely that the plasticity of breeding behaviour and the tolerance of man could lead to a closer affiliation of Red-billed Hornbill breeding sites to human settlements just as observed on this occasion.

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Grey Crowned Cranes *Balearica regulorum* in urban areas of Uganda

The greatest threat to birds in tropical Africa is habitat change; often a result of unsustainable agricultural practices (BirdLife International 2013a) and this certainly applies to Grey Crowned Cranes *Balearica regulorum*, whose primary breeding habitat — seasonal swamps — is increasingly being converted into cultivation and other land uses. Cranes are also caught, often as small young, for the wild bird trade, and to be kept as pets by individuals as well as hotels and other institutions (Muheebwa-Muhoozi, 2001). Less often, some are caught for traditional uses. Cranes typically roost on tall trees, and feed in a wide variety of open habitats, where human disturbance is also increasing. In recent years, cranes have found places to feed, roost and even breed in urban parts of Uganda, where they seem to have adapted to human disturbance.

Grey Crowned Cranes in Uganda are found most commonly in the steep valleys of the south-west and the very shallow valleys of the south-east (Gumonye-Mafabi 1989, Muheebwa-Muhoozi 2001, Olupot *et al.* 2009). But over the past 30–40 years, their population in Africa has declined by about 70% (Beilfuss *et al.* 2007), and probably by a similar amount in Uganda (SN unpublished data), and the species is now considered to be Endangered (BirdLife International 2013b).

This study was conducted at two feeding and roosting sites: 1) Kiteezi, which is the Kampala landfill site located at about 12 km north of the city, from September 2010 to December 2014 and 2) the main campus of Islamic University in Uganda located at Nkoma approximately 3 km from Mbale Town, 26 May 2013 to 28 July 2014. Total counts of birds were made at these sites.

Observations in Kampala

Grey Crowned Cranes remain widespread in central Uganda, although usually in small numbers. However, during the 1970s, a flock of more than one hundred was regularly seen at two large farms about 20 km north of Kampala (Pomeroy 1980a), and some bred in nearby swamps then. Kampala has now grown into a city of some 1.7 million people (www.ubos.com), and in recent years a flock of up to 96 birds has frequented the main Kampala landfill site at Kiteezi, about 12 km north of the city centre (Fig. 1). These birds also spend time in a nearby valley, where they forage in the pasture, and at night most of them roost on high voltage pylons 2–3 km to the west of the landfill site. From the study of 2012 to 2013, this flock at Kiteezi included up to five fully-grown immature birds. There are no recent records of cranes roosting on trees in the Kampala area, but a few birds also roost on pylons near the Kampala northern bypass.

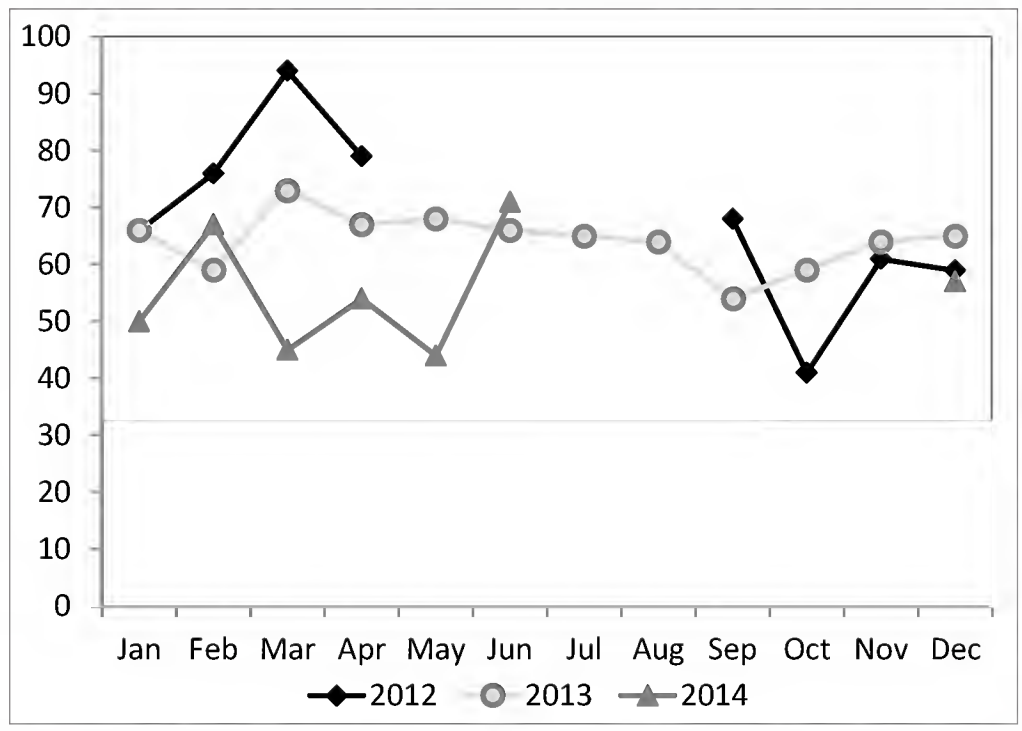

Figure 1. Numbers of Grey Crowned Crane at Kiteezi landfill. Gaps indicate months when surveys were not conducted.

The habit of feeding on Kampala's rubbish dumps dates back to the 1970s (Ssemmanda & Pomeroy 2010), and up to 25 birds were found roosting on pylons in central Kampala in the late 1990s and early 2000s. Therefore this habit also dates back about 15 years. Roosting birds always select the highest arms of the pylons, which are much higher than any nearby trees. It is perhaps for the height, with its presumed safety from possible predators that attracts them. Before roosting, they often fly around the pylons, and move from one to another, but, unlike Marabou Storks *Leptoptilos crumeniferus*, manage to avoid fatal collisions with the power lines (Kibuule & Pomeroy 2015). In addition to Grey Crowned Cranes, some 7000 Cattle Egrets *Bubulcus ibis* currently roost in central parts of Kampala, and small numbers of Pink-backed Pelicans *Pelicanus rufescens* have also roosted there in the recent past.

In the early 1970s, flock sizes of cranes north of Kampala varied seasonally (Pomeroy 1980a), being somewhat smaller in the main breeding seasons of October to December, and again from April to June. It was assumed that the cranes bred in nearby seasonal wetland areas at the times of year when these wetlands are drying up. In our recent counts (Fig. 1), numbers were a little lower from September to November, but not in April to June. However, in 2013, cranes were discovered to have bred in two wetlands in the northern outskirts of Kampala, and at one of these, Walufumbe, two newly-hatched young were found in July, suggesting egg-laying in June. Both young survived for at least two months, when observations there ended. Two young were also fledged by a pair at Lubigi swamp, being well-grown by November and thus with a similar egg-laying date to the other pair.

Crane and other species sightings in Mbale

In Mbale, a town in eastern Uganda with a population of only 0.44 million people in 2012 (www.ubos.org), a number of species have often been recorded roosting together at the campus of the Islamic University in Uganda, which is only 3 km from the town centre. For example, one large mvule tree *Milicia excelsa* had the following birds roosting on it as recorded in a single count on 26 May 2013: 24 Grey Crowned Cranes, 2 Pink-backed Pelicans, 25 Marabou Storks, at least 150 Open-billed Storks *Anastomus lamelligerus*, 8 Yellow-billed Storks *Mycteria ibis*, 12 African Spoonbills *Platalea alba*, 16 Sacred Ibis *Threskiornis aethiopicus*, 15 Black-headed Herons *Ardea melanocephala* and 5 Little Egrets *Egretta garzetta* (Fig. 2). However, these observations were made during the university vacation; when students returned, and the area around the tree became very busy, numbers of roosting cranes progressively reduced to two, suggesting that their tolerance of people is limited, compared to the other species, whose numbers did not decline.

Figure 2. *Balearica regulorum* roosting on a *Milicia exclesa* tree located in close proximity to the IUIU main gate. Photograph taken on 8 June 2013 at 18:25.

Of the species mentioned above, Marabou Storks and Pink-backed Pelicans also nest successfully in various towns and villages in Uganda (Pomeroy 2002, Nachuha & Quinn 2012), although the pelicans must sometimes fly considerable distances to feed, whilst the Marabous mainly feed in towns.

Conclusions

The occurrence of Grey Crowned Cranes and other large waterbirds in urban areas dates back at most 50 years, and presumably results from the birds feeling more secure in these urban centres than in the surrounding rural areas. When feeding at the rubbish dump, cranes can be as close as 10 m to the people working there; to a large extent, birds and people ignore each other, although a few birds with damaged legs and other injuries suggest that occasionally sticks or other objects are thrown at them.

Although cranes may feed and roost safely in urban areas, they find very few places to breed, because undisturbed swamps used for nesting and protecting the young before they can fly are becoming increasingly rare. It is likely that the loss of secure breeding sites contributes significantly to the steep decline in crane numbers. To halt this decline, more suitable wetlands need to be protected. It is estimated that only 20–30 pairs of cranes nest in Uganda's National Parks, with a few more in wildlife reserves, but together these constitute a very small proportion of the population in the country as a whole, currently estimated at about 13 000 (Muheebwa-Muhoozi unpublished data). Conservation must therefore focus on unprotected areas and in the southwest of Uganda, conservationists, working with local communities, have been very successful in getting people to provide this protection with fledging success increasing from 1.2 per pair in 2007 to 1.7 in 2011 (Muheebwa-Muhoozi unpublished data).

Sites for feeding, roosting and breeding are the three main requirements of cranes,

and among these the last remains the biggest problem, which is unlikely to be solved without better protection of the important wetlands. But the adaptability of cranes as shown in this article suggests that it may be possible to halt the decline of Uganda's national bird. However, more effort will be required if the species is to remain a familiar bird over most of the country. The Species Action Plan for Grey Crowned Crane, currently being prepared in co-operation with *Nature*Uganda, could take account of these findings.

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Avian mortality rates on a power line near Kampala, Uganda

Among the most spectacular birds in Uganda is the Marabou Stork *Leptoptilos crumeniferus,* which nests very conspicuously in Kampala, and the Grey Crowned Crane *Balearica regulorum*, the national bird and also globally red-listed by IUCN as Endangered (BirdLife International 2014). These two species frequent the main landfill site for Kampala's garbage, at Kiteezi, some 12 km north of the city centre, as do many other birds, including a number of Hooded Vultures *Necrosyrtes monachus*, also globally Endangered and declining quite rapidly in the Kampala area (Ssemmanda & Pomeroy 2010).

Running close to the Kiteezi dump are two sets of power lines, the 240-kV Bujagali power line carried on tall metal pylons, and a smaller 33-kV line, with three conductors supported on wooden poles, and running about 20 m to the side of and parallel to the high voltage line. For at least twenty years, storks, cranes and vultures have roosted on high voltage pylons in various parts of Kampala, including the Bujagali power line since it was erected in 2011. The cranes also feed in a grassy valley close to the landfill site. Most of the Marabou Storks visiting this area come from the Kampala breeding colony, which contained about 740 nests in the 2013–14 breeding season (DP unpublished data), whereas there are only occasional records of the cranes and vultures nesting in the Kampala area (Carswell *et al.* 2005 and unpublished records). Given (i) the propensity for these birds to roost on utility structures, and to fly regularly in the vicinity of the associated power lines, and (ii) the size and behaviour of the species in question, which probably exposes them to increased risk of colliding with the lines and/or of being electrocuted on live infrastructure (Lehman *et al.* 2005, Jenkins *et al.* 2010), we postulated that the power lines near to the Kiteezi dump site could be a significant source of mortality for these large birds. While there is considerable literature on bird mortality associated with power lines (e.g. Lehman *et al.* 2005, Jenkins *et al.* 2010, Edison Electric Institute 2012), we know of only one such study from East Africa (Smallie & Virani 2010), which reports on potential mortality risk rather than detailing actual deaths.

In order to determine the avian fatality rate on the power lines at Kiteezi, we made walked surveys along the route of the power lines running adjacent to the landfill site over the year from November 2012 to October 2013. Our survey area extended along the route of the two sets of lines, to the east and west of the landfill site, and included the pylons on which cranes and vultures roosted at night (and sometimes rested during the day). There is a 30 m way-leave on either side of the high voltage lines, where people are allowed to cultivate low-growing crops such as maize and beans, and it is easy to walk through this area (there are good footpaths), looking for any dead bird that may have fallen to the ground, and recording details of the identity and location of any likely to have been killed in collision or electrocution incidents; birds previously noted, if still present, were excluded from the count.

A total of ten counts were made (Table 1), each covering a distance of about 6 km, divided into two sections, namely the eastern section, with ten pylons, as far east of the landfill site as the Kampala–Gayaza road at Kyanja, and the western section of nine pylons, extending west to the Kampala–Bombo road. At the same time, local people met along the way were asked for any evidence they had of bird strikes. We also conducted monthly counts of birds at the landfill site, which covers about 15 ha and, with the permission of the local authority, it was simple to walk around the whole area, making a total count (Table 2). This also included those few birds which might be perched on nearby trees or buildings.

Table 1. The distribution of dead birds found along the surveyed sections of the Kiteezi power lines 6 km surveyed, and some responses from residents. No other species was found dead.

Date 2012–2013	Section	Dead birds recorded			Comments by residents of the area
		Marabou Stork	Grey Crowned Crane	Hooded Vulture	
27 Nov	E	1	0	0	All interviewed residents had seen dead birds due to collision or electrocution, strikes are common in big birds
19 Jan	E	3	0	0	Electrocution occasionally happens to Grey Crowned Cranes
16 Mar	E	1	0	0	It is common with Marabous, sometimes birds fight while standing on the electric lines.
30 Mar	W	1	0	0	Both small and big birds die due to electrocution, but Marabous and Grey Crowned Cranes are more vulnerable
18 Apr	E	1	0	0	Birds' death due to electrocution is independent of the size of bird. Activity including mating and fighting on the electric lines makes some birds more vulnerable
27 Apr	W	0	0	0	Few cases are observed where a Marabou survives death after collision. Two residents reported that birds' deaths due to collision are responsible for power shortages in the area, "when a Marabou knocks an electric wire, sometimes power goes off"
20 May	E	3	0	0	Most frequently these accidents happen to Marabous
22 May	W	0	0	0	Deaths occasionally occur
22 Jun	E	1	0	0	Death was caused by "electric collision"
23 Jun	W	0	0	0	Deaths mostly occur to Marabous. Some birds fly away with injuries after the accident
30 Jul	E	4	0	0	Electrocution mostly kills big birds, i.e. Marabous
31 Jul	W	0	0	0	Accidents rarely occur
27 Aug	E	0	0	0	Electrocutions are common during wet seasons
28 Aug	W	0	0	0	Electrocution occurs to big birds like Marabous
25 Sep	E	2	0	0	At times, bats and doves also get electrocuted
25 Sep	W	0	0	0	54 Grey crowned cranes were recorded roosting on the pylons
24 Oct	E	6	0	0	Electrocution happens mostly after rainfall and during evenings
26 Oct	W	0	0	0	59 cranes found roosting on the pylons

Table 2. Numbers of large birds frequenting the Kiteezi landfill site during the study period.

Species	Period	Average	Highest	Lowest	Range
Hooded Vulture	Nov–Sep	26	59	9	50
Grey Crowned Crane	Nov–Sep	54	66	37	29
Marabou Stork	Nov–Apr	941	1420	650	770

We recorded a total of 23 bird casualties, all of which were Marabou Storks, which is by far the commonest of the three species, with numbers exceeding ten times those of the other two species combined. They also have the largest wingspan, of 226–263 cm (Pomeroy 1977), compared to about 150 cm for Hooded Vultures (C. Barlow, pers. comm.) and 192 cm for the Grey Crowned Crane (Pomeroy 1980). And cranes are the most agile in flight, often turning sharply as they fly, and might thus be less vulnerable.

All the carcasses were found lying below the main power lines, mostly near but not usually beneath the pylons themselves, and all but one along the eastern section (Table 1). Although we made no observations at night, this would be consistent with collision as the main cause of death, particularly amongst young birds at night, when the conductor wires would have been hard to see. Residents reported that other birds are also killed, mainly large birds, and that these fatalities sometimes led to a cut in the power supply, implying that some birds were electrocuted, but this would appear to have been uncommon.

The present study has identified a clear bird mortality hotspot on the transmission line running adjacent to the Kiteezi landfill site, which is resulting in significant casualty rates for important birds in the area, possibly including globally threatened species, which must be considered to be at risk — cranes were mentioned twice in this connection by local people. We shall recommend to the electricity authority that markers (either static bird flight diverters or dynamic 'flappers') be placed along the power lines for at least 2–3 km east of the Kiteezi landfill site, and that bird guards are installed at offending pylons to deter birds from perching in high risk areas, close to live hardware on the pylons. Provided that they are clearly seen at night, these markers should ensure that both avian mortality rates, and the frequency of costly power outages, are substantially reduced.

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Abyssinian Scimitarbill *Rhinopomastus minor cabanisi* in Tanzania: a breeding record in a traditional beehive

On 27 December 2013, between the Tarangire National Park entrance and Makuyuni, Tanzania, at 3°33´S, 36°04´E, altitude 1073 m, I stopped at 11:00 to photograph an acacia tree with nine traditional beehives in it. To my amazement I saw two Abyssinian Scimitarbills *Rhinopomastus minor* entering a hole on the bottom of one of the beehives. Each had food in its bill, apparently insects or larvae. I watched for about ten minutes during which each bird separately made three to four visits to the beehive and entered it. Two days later both birds were again there and the same behaviour was noted. I recorded that two beehives had holes in the bottom of them. That with the nest was approximately 5 m above the ground, its dimensions approximately 90 cm x 40 cm x 35 cm. The opening to the nest on the lower surface of the beehive was 4 cm in diameter. On 7 February 2014 I passed the site again. The birds had gone but I was informed by local Maasai youths that bees had already left that tree and moved a few kilometres away in September 2013. During my three visits I saw no bees and no other species of birds on the tree.

In Tanzania, Abyssinian Scimitarbill of the race *cabanisi* is a sometimes common resident of open bushed and wooded habitats in lower rainfall areas east of Lake Victoria (Britton 1980, Zimmerman *et al.* 1996). There are scanty breeding records but Brown & Britton (1980) indicate a strong preference for the dry season, possibly peaking in December in Region D. The species is a monogamous, solitary nester. The typical nest is in a natural hole or fissure, or a hole excavated by another species, in a dead or living tree, 0.5–2 m above ground (Fry 1988). There is a record of parasitisation by Greater Honeyguide *Indicator indicator* (Madge & Cunningham van Someren 1975).

The Abyssinian Scimitarbill is described as insectivorous, eating mostly adults and larvae of insects: beetle larvae, caterpillars, ants, flies and wasps; occasionally seeds and berries (Fry *op. cit.*). It does not eat honey and yet is parasitized by the Greater Honeyguide, which does eat honey. The fact that our birds were nesting in an unused beehive raises interesting questions about the relationship of the species to the Greater Honeyguide and to bees.

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Confirmed range extension of the White-billed Buffalo Weaver *Bubalornis albirostris* in northern Tanzania

The genus *Bubalornis* is represented by two similar species, one with an almost entirely black with few white patches (males) or brownish (females) plumage, the Red-Billed Buffalo Weaver *B. niger* and the White-billed Buffalo Weaver *B. albirostris.* The main diagnostic characters are the bill and leg colours, and the bill morphology. The two species are highly social and breed communally in large multi-chambered nests, and are mainly resident in dry woodlands and savannas in a large part of sub-Saharan Africa.

The distribution of the two taxa is parapatric and for this reason, until recently, they were normally considered conspecific. *B. niger* is distributed in eastern and southern Africa from southern Ethiopia to central Tanzania (race *intermedius*), and from western Angola to southwest Mozambique south to the northern provinces of South Africa (race *niger*), whereas *B. albirostris* inhabits a strip from southern Mauritania and northeast Guinea-Bissau east to western Ethiopia and northwest Kenya (del Hoyo *et al.* 2010).

One of us (SP), during a recent visit to Serengeti National Park, on 11 November 2013, observed and photographed at least three different individuals of *B. albirostris* searching for food near the visitor centre at Naabi Hill Gate (02°49′56″ S, 34°59′54″ E, 1729 m; Plate 1).

In the Serengeti area only *Bubalornis niger* is normally seen (Schmidl 1982, Sinclair & Arcese 1995), and almost all the eastern African bird guides (Zimmerman *et al.* 1999, Stevenson & Fanshawe 2002), handbooks (del Hoyo *et al.* 2010), and also the updated ABC checklist (Dowsett *et al.* 2014) do not report *B. albirostris* for Tanzania (or southern Kenya). Only Sinclair and Ryan (2010) indicate the species in northeast Tanzania with a single cross symbol (x) used for extra-limital or vagrant records. This is referred to as the first record for Tanzania, obtained exactly in the same location on 2 March 2005. At the time it was considered an odd record of a bird well outside its

normal range, observed in a well-watched area (J. Stenbäck *in litt.* in Lindsell & Fisher 2009).

Plate 1. Three different individuals of *Bubalornis albirostris* at Naabi Hill Gate, Serengeti National Park, 11 November 2013 (Photos S. Panzera).

Even without any recorded evidence, breeding activity in the area now seems probable, considering the overlap of observations at the same site some years apart, the mainly sedentary habits of the species, as well the suitability of the surrounding habitat (Sinclair & Arcese 1995, del Hoyo *et al.* 2010).

Research in other localities in northern Tanzania and southern Kenya is obviously needed to verify if the Serengeti harbours a truly isolated population or if this apparently isolated spot is connected with its main range through other colonized sites. Further research in areas where the two taxa live in sympatry is certainly warranted on taxonomic, ecological and ethological grounds.

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Kenya Bird Map: an internet-based system for monitoring bird distribution and populations in Kenya

Background

Data collection for the first Kenya Bird Atlas started in the 1970s and continued until 1984, and also included pre-1970 data mainly from museum specimens. Over 200 contributors, mainly Kenyan citizens, were involved in the data collection (Lewis & Pomeroy 1989). The sources of data were: published records, museum skins, contributions received directly from observers, nest record cards submitted to the EANHS Nest Record Scheme, and data from the Ringing Scheme of eastern Africa.The data were analysed and published in the book *A Bird Atlas of Kenya* by Lewis & Pomeroy (1989). This atlas used half degree cells, which were 30 min x 30 min, or 54 km x 54 km (Lewis & Pomeroy 1989). The authors noted that, "Its coverage is certainly not complete, but we believe nevertheless that it gives a fair indication of Kenya's avifauna, especially during the main atlas period of 1970–1984" (Lewis & Pomeroy 1989).

Lewis & Pomeroy (1989) provided a good idea of the distribution of birds in Kenya at the time. Bird distributions have changed over the intervening period, primarily because of habitat destruction, but it is not known to what extent. Over the same period, noticeable changes in long-term weather patterns may also have affected bird distributions (see, for example, Humphrey 2004). Since 1989, several attempts to document bird distribution records in Kenya have been made. During the 1990s the then Department of Ornithology at the National Museums of Kenya regularly published range extensions of birds in the now discontinued *Kenya Birds*. From 2006 to 2013, the Kenya BirdFinder Project (http://www.worldbirds.org/v3/kenya.php), based on BirdLife International's World Bird database, kept records of bird observations in Kenya. These initiatives had a few shortcomings as they failed to provide comprehensive answers to the three questions on which the conservation status of a species hinges, i.e. Where are they? How many are they? and What is their trend? (Underhill & Gibbons 2002). The protocol of the Kenya BirdFinder did not allow for robust data analysis as it focused on records from 'hot spots' only. Birders primarily visited the major birding sites, and there were no committed attempts to visit uncovered areas to enable mapping of bird distributions. Furthermore, vetting of records was a major challenge and the data could not be used for scientific purposes without a significant amount of cleaning up.

The Kenya Bird Map (http://kenyabirdmap.adu.org.za) is an internet-based bird distribution database that employs citizen science to map the location of birds and describe their distribution in real time. The database will map observations using a finer scale than the previous atlas and the methodology allows for robust statistical analysis of the data. Specifically, birds are recorded in the order they are seen or heard together with a count of the number of species observed per hour, which provides an index of the relative abundance of each species. So rather than just providing an index of the presence or absence of a species (as the previous atlas did), this atlas will provide a measure of abundance for each species based on the presence of other species and the location where it was recorded. By pooling the efforts of many citizen scientists, the Kenya Bird Map will record the distributions of Kenya's birds and in so doing, provide a powerful tool for conservation.

The Kenya Bird Map employs a finer scale of mapping using 5 min x 5 min (*c.*

9km x 9km) cells, referred to as a 'pentad'. There are 36 pentads in each Quarter Square Degree (QSD) and 8208 pentads in Kenya, as compared to 228 QSDs in the first atlas. This smaller grid cell means that the distribution maps produced will be of far finer resolution and allow for better analysis of species distribution in relation to other variables such as habitat, altitude and human impacts. The pentads are linked to Google Maps and are accessible on the Kenya Bird Map website. The pentad maps allow participants to easily pinpoint their pentad and to identify pockets of different habitats within each pentad that might hold additional species. Data collection is by citizen scientists — volunteer observers who visit the sites and pentads of their choice anywhere in Kenya to map birds.

Mapping protocol

A key strength of the Kenya Bird Map lies in its simple yet robust sampling protocol, which produces data that can be used with confidence for analyses. The main protocol, termed the 'Full protocol' is summarized as follows:

- Spend a minimum of two hours observing and recording birds within a pentad. List all the bird species observed in the order that they are encountered. Make a note of the cumulative number of birds seen at the end of each hour.
- Additional survey time can be added to the same pentad for up to five days from the start of a survey. Add any new species (in the order that you encounter them) to your initial list until the end of the fifth day. A new list should only be started for the same pentad after the end of the five-day period (i.e. on day six).

An additional protocol, the 'ad hoc protocol', is used to map a species' distribution and record the time of year when it was seen, but the records are not used for a species' reporting rate or its abundance. The ad hoc protocol is used when adherence to the full protocol cannot be met, i.e. when the observer is birding for less than two hours within the same pentad. This protocol is simply to submit a list of records for a given pentad on a given date. Observations of interest can be submitted as an 'incidental' observation for a single species such as an unusual species, or a large group of birds, or out of season records.

Entering records into the database is also simple for anyone who is computer literate and has reasonable access to the internet. An offline database management system is being developed that will allow for easier submission of data when internet access is poor, and an application for use in smart phones is planned. Guidelines for inputting data via the website are available at http://kenyabirdmap.adu.org.za/docs/kbm_howto.pdf.

Proper validation of the data is clearly crucial for them to be useful for analyses. The system is set up to automatically vet data once an initial vetting and validation of species in each pentad has been done by a select committee of experienced birders and ornithologists. The initial vetting is therefore quite time intensive, but rapidly reduces as subsequent records are self-validated.

Expected Impacts

The distribution of a species is the most basic information required in order to conserve any species. A dynamic atlas such as the Kenya Bird Map is therefore an invaluable conservation tool. With data available for free, the atlas can be conveniently used by researchers, tourists, policy-makers, etc. The new atlas will provide a clear

and real-time distribution map of bird species that will be comparable to the first Bird Atlas of Kenya data, which will be added to the website. After five years we will analyse the data collected and compare them to the first atlas to show changes in a species' distribution over the 30-year period since the first atlas. Potential applications of the atlas data include:

- An early warning system for environmental change by tracking changes in bird distribution and relating them to environmental degradation, climate change, etc. (see for example, de Villiers 2009 and http://www.adu.org.za/docs/climate_change_booklet.pdf)
- Tracking of the timing and patterns of bird migration
- Monitoring population sizes and trends of threatened and endemic bird species (see Robertson *et al.* 1995)
- Provide evidence of bird species' abundances in Kenya (see Gibbons *et al.* 2007)

The Kenya Bird Map may also encourage development of atlases for other taxa, such as reptiles, mammals, butterflies, etc. (see http://vmus.adu.org.za/).

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Review

Birds of the Serengeti and Ngorongoro Conservation Area
Adam Scott Kennedy

2014, Princeton University Press, Wild Guides, ISBN 978-0-691-15910-2, 224 pp., full colour Price: US$27.95 / £17.95

Birds of the Serengeti (and its sister publication, *Birds of the Masai Mara*) is a new type of field guide for us in East Africa. It is a guide to the birds most likely to be seen, rather than all species recorded. The birds are grouped by habitat, rather than taxonomy; the author uses photographs, rather than drawings; and the birds are set in their natural surroundings. So the birds are 'as you see them' in nature — or at least, as you usually see them.

The book starts by introducing its novel approach and the habitats, which include sections on birds of the air, night birds and Lake Victoria specials. The grouping of birds by habitat is obviously most suitable for a local guide, where the habitats are limited and the species' preferences well known. Each habitat is represented by a magnificent photograph, a description with examples of sites, and smaller photos of a couple of characteristic birds. The birds of each habitat are then featured in detail.

Each bird is shown as a large colourful photo that includes the typical vegetation — or sand, water, blue sky. With some computer trickery, similar species are compared side by side in their habitat. The computer wizardry can be confusing at times, with the birds grouped together in their leafy or grassy habitat, but their names and descriptions scattered across two pages.

The text is peppered with useful tips for identifying birds. For instance, three 'collared doves' are shown in a composite image at a bird feeder: Ring-necked, Red-eyed and African Mourning Doves (*Streptopelia capicola*, *semitorquata* and *decipiens*). In addition to a brief description of their appearance, habits and songs, there is a section on telling these three doves apart, very useful for a beginner. Names used in other parts of Africa are often included, a help to the confused traveller. And for those moments when there are no birds to be seen, there are fun facts to educate and entertain non-birding companions.

The result of this innovative approach is superb. It guides the layman on where to look for birds and what to look for. I wish there was such a field guide for every Important Bird Area (IBA) in East Africa! The only drawback is the price, obviously out of reach for most local communities.

Fleur Ng'weno

Obituary

John Sydney Ash (1925–2014)

John's long ornithological life had many facets. But he will be remembered particularly for his role in revealing the damaging impact of agrichemicals in southern England during the 1950s and 1960s, for his contribution to studies of bird migration, and for his pioneering work in the 1970s and 1980s on bird distribution in northeast Africa.

Born at Gosforth, Northunberland on 26 May 1925, John's bird-watching career began in Northumberland. From an early age he was recording nests and ringing birds across the county. A Shag *Phalacrocorax aristotelis* ringing programme he started on the Farne Islands later led to a long-term University of Durham project. After attending school in Yorkshire he studied agricultural entomology at Durham (1942–45), then joined the RAF for two years' national service. Returning to post-graduate research at Imperial College he met and married Helen Jonquil Gudgeon.

In 1951 he joined the newly formed ICI Game Research Station at Fordingbridge in Hampshire and soon completed a PhD thesis on Mallophaga and other avian parasites. Over the next few years, with the late Terrance Blank, he carried out a long-term study of the ecology and pathology of Grey Partridges *Perdix perdix* which resulted in several important papers. By 1952 they were documenting instances of oganophosphate poisoning in partridges and other farmland birds. They urged further research into the harmful effect of agricultural sprays and drew attention to the avian mortality caused by dieldrin seed dressing. When ICI closed down its game research station in 1961 John helped set up a small membership-based unit, the Game Research Association, of which he became director in 1966. Here he encouraged research on avian diseases and parasites and continued to produce evidence of the harmful impact of toxic chemicals on wildlife. For his work at this time and services to the British Trust for Ornithology he was awarded their Tucker Medal in 1967.

Throughout these years John had pursued his interest in bird migration. He helped set up Portland Bird Observatory in 1960, carried out a study of the Red-backed Shrike *Lanius collurio*, and travelled increasingly, to Europe, the Middle East and Africa. He was a leading member of spring expeditions to Jordon (1963), Morocco (1965) and Lake Chad (1967), studying premigratory fattening and weight loss problems in passerines crossing the Sahara. But it was in northeast Africa that his main contribution to the ornithology of the continent was to be made.

In 1969 he joined the United States Naval Medical Research Unit No. 3 (NAMRU-3), based in Addis Ababa, to investigate the role of migratory birds in the transmission of parasites and blood-borne pathogens. Together with Jonquil and their daughter Caroline he spent nine years in Ethiopia, and travelled widely, catching local and migrant birds to collect samples and material. He used this unique opportunity to embark on a pioneering atlas project based on a ½° x ½° grid, and often working single-handedly managed to visit over 70% of the squares in Ethiopia. His considerable stamina and resourcefulness were often tested during travel in hot and remote areas, and his cheerful diplomacy was to prove vital in situations where security was precarious. He organized and inspired an Ethiopian ringing scheme during the 1970s, when over 45000 Afrotropical and 15000 Palaearctic birds were ringed, the majority by John himself (*Scopus* 4: 85–101). His many notable records included discovery of

a new species, the Ankober Serin *Crithagra ankoberensis* (*Ibis* 121: 1–7). The information he gathered on the routes, migration times and weights of Palaearctic birds in Ethiopia has been vital in the broader appraisal of migration along the East Africa–Middle East flyway.

Forced to leave Addis quickly in 1977 when Ethiopia changed allegiance to the Soviet Union, John spent a year at the Smithsonian Institution organizing and documenting his material. But he was soon back in Africa working with the FAO Quelea Control Programme in Somalia. Based at Mogadishu from 1978 to 1981 he was able to extend his atlassing work in a country that had been neglected by ornithologists for many years. He found another new species, Ash's Lark *Mirafra ashi* (*Bulletin of the British Ornithologists' Club* 102: 106–114), and added over 50 species to the country's list (*Scopus* 7: 54–79). He formed an alliance with John Miskell with whom he visited remote northeastern parts of the country, and together they produced a revised ck-ecklist of the birds of Somalia (*Scopus* Special Supplement No. 1). During an additional year with FAO in Uganda, with further scope for travel, John was able to make a substantial contribution to the ongoing Atlas of Uganda.

Retiring in 1983, John and Jonquil divided their time between their New Forest home, where he continued to order and analyse material from his many projects, and further travels abroad. Prolonged visits to the Maldives, Bali and Nigeria produced valuable records and accounts, and on a return to Ethiopia in 1993 he rediscovered the Ethiopian Serin *Crithagra flavigula.* His continued interest in migration between Africa and the Middle East took him on several expeditions with Gerhard Nikolaus, to Northern Sudan, then in the 1990s to Oman and Saudi Arabia. His affection for southwest France led to extended summer camping visits during which he renewed his old interest in seabirds. In 1997 he was awarded the Union Medal of the British Ornithologists' Union. His work in the Horn of Africa culminated in the production of two major distributional books, *Birds of Somalia* (with John Miskell) in 1998 and *Birds of Ethiopia and Eritrea* (with John Atkins) in 2009.

John died on 6 January 2014, only three days after Jonquil. He will be remembered by his many friends and colleagues for his patience, generosity and good humour as well as for his remarkable enthusiasm and determination. His freely given advice and encouragement have inspired many a young ornithologist setting out on an African enterprise.

David Pearson

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Dates: 21 February 2001 [note the order, no comma, not 21st].

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Names of birds: Cape Rook *Corvus capensis* [no comma, no parentheses, no author's name].

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