

The conservation status of the forest birds of the Taita Hills, Kenya

THOMAS BROOKS, LUC LENS, JIM BARNES, ROGER BARNES, JOHN KAGECHE KIHURIA and CHRISTINE WILDER

Summary

The forests of the Taita Hills of south-east Kenya are of great importance to conservation, holding three endemic birds and many other endemic taxa. We surveyed birds in their remaining forest fragments in July–August 1996, and followed up these surveys with collection of remote sensing imagery of the area, an assessment of museum specimens and a thorough literature review. In this paper we assess the conservation status in the Taita Hills of their 47 species of forest birds. We conclude with general recommendations for the conservation of the area.

Introduction

Recent taxonomic changes have thrust the forests of the Taita Hills of south-east Kenya into conservation infamy, for three of their endemic bird taxa are now considered full species and listed as Critical by Collar *et al.* (1994). The forests, which presently cover less than 400 ha, are included in an Endemic Bird Area with the Eastern Arc mountains of Tanzania (Stattersfield *et al.* 1997), with which they have close biogeographical affinities (Lovett 1985). Despite this importance for conservation, however, there has never been a detailed study of the area's avifauna. We studied birds in the remaining forest patches of the Taita Hills in July–August 1996, as part of a wider project to assess the times to extinction of bird species following deforestation. We aim here to use our results to provide baseline data on the conservation status of the forest birds of the Taita Hills.

Physical geography

The Taita Hills (Figure 1) lie in south-eastern Kenya at 03°20'S, 38°15'E, about 150 km inland from the coast and covering an area of about 250 km². They are isolated from other mountainous areas to the south-east (Shimba Hills), south (Pare and Usambara Mountains), south-west (Mt Kilimanjaro), west (Ngulia and Chyulu Hills) and north-west (Kenyan highlands) by the vast plains of Tsavo (c. 700 m altitude). Dry bushland runs up into the lower slopes of the hills, grading into moist forest, farmland or plantation at 1,200 m. The hills are composed of soft metamorphic rocks overlain by a quartzite cap (Beentje 1987). Mean rainfall in Wundanyi Town (at 1,200 m) is 1,329 mm per year (that in the hilltop forests probably exceeds 1,500 mm per year), with rainfall peaks in April and November (Beentje 1987).

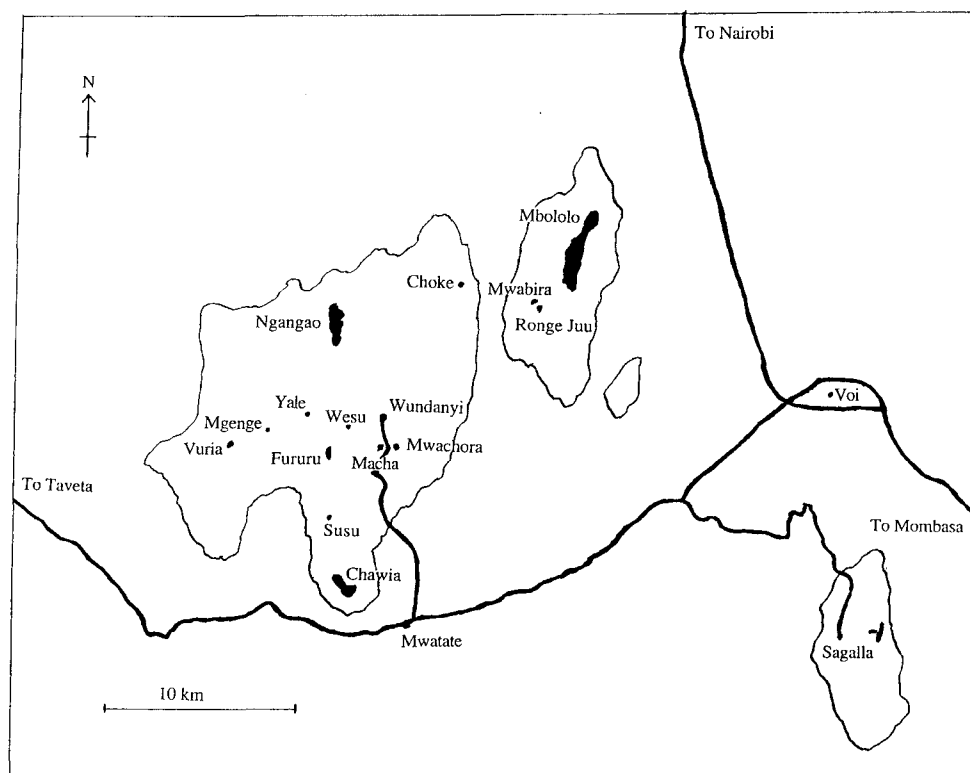


Figure 1. The Taita Hills. Areas shaded black are indigenous forest, dots represent towns and other sites mentioned in the text. Thick lines show major roads, thin lines delimit the approximate area above 1,200 m.

The Taita Hills are themselves divided into three distinct isolates. Sagalla Hill (also known as Ndara) lies due south of the town of Voi, and is separated from the rest of the Taita Hills by the Voi River, level with the rest of Tsavo at 700 m. To the north-east of the range lies the Mbololo massif (also known as Mraru, Wangonya or Ndi) which is itself separated from the rest of the hills by a valley at about 900 m. The main body of the hills, known as Dabida, includes their highest peaks of Vuria and Ngangao, and the district capital of Taita-Taveta, Wundanyi, lies in the centre of this massif.

Isolated from the Taita Hills 50 km to the south-east lies Mt Kasigau (1,500 m), which is reported to have biogeographical similarities with the Taitas (Collar and Stuart 1988). We did not visit the site due to constraints of time and safety. A survey of Mt Kasigau is urgently required.

Of the three units of the Taita Hills, Sagalla retains the smallest area of moist forest: c. 4 ha, all of which now lies at c. 1,500 m. The natural forest is split into two sections, one along the hill's crest and one running down a small stream from the crest. It is completely surrounded by a large plantation of *Pinus*, established in 1955 (Beentje 1987). The slopes of the hill (c. 1,200–1,500 m) below the forest are intensively farmed, with the village of Sagalla lying at c. 1,200 m.

The Mbololo massif retains c. 200 ha of moist forest, mainly between c. 1,800 m and the peak at 2,209 m. This forest is bisected along the hill crest by a track

cleared in the 1970s (Beentje 1987), and has a large *Pinus* plantation on its northern edge. Below this the forest has largely been cleared for intensive agriculture (although no roads up Mbololo are accessible to two-wheel-drive vehicles). On the steep north-east flank of the massif undisturbed forest runs further down the hill. Elsewhere, however, only tiny (1-ha) fragments of moist forest (Ronge Juu and Mwabira, on the south-west flank) survive along stream valleys as low as c. 1,200 m. These fragments are surrounded by the huge Ronge plantation of Mexican pine *Pinus patula*, which is managed mainly for sap production: only a tiny fraction of this forest remains natural (Collins and Clifton 1984).

Ngangao (also known as Umengo) lies between c. 1,700 and 2,149 m on the northern edge of the hills. At 92 ha (Wass 1995 lists this area as 149 ha) it is the largest forest in the main Taita massif. It is flanked by intensive agriculture and, to the west, by steep cliffs. The forest includes several plantations of *Pinus*, some dating back to 1955 (Tetlow 1987), *Cupressus* and *Juniperus*. Chawia (c. 50 ha) lies on the south-western tip of the hills at c. 1,500 m, on top of the Bura Bluffs and overlooking the town of Mwatate. This forest has been heavily degraded by the planting of exotic trees (*Pinus* and *Eucalyptus*) and the cutting of saplings. Fururu (c. 5 ha, although Wass 1995 lists this area as 17 ha and IUCN 1996 as 14.12 ha) lies on the ridge crest north of Chawia, at c. 1400 m, and has also been interplanted with *Eucalyptus*. The peak of Vuria (2,228 m), on the western edge of the hills, retains c. 1 ha of heavily degraded forest at c. 2,000 m on its slopes. Finally, Mwachora and Macha, on the southern edge of the hills just south of Wundanyi, retain only 2 ha of forest each on their peaks at 1400 m.

Human geography

Human settlement of the Taita Hills dates back at least 2,000 years to the arrival of the Mbisha, an East Rift Southern Cushitic people who cultivated grain using irrigation and manuring. From about the tenth century, these people merged with Bantu who moved north from the Pare mountains, bringing yam and increasingly banana cultivation with them and establishing subcultures on Sagalla or "Saghala" and Dabida or "Dawida" (Ehret 1988). This contrasts with the statements of Beentje (1987, p. 24), that "the Taita Hills were occupied by the Kitaita in the 17th–18th century; before their arrival, Wanderobo (known to the Kitaita as Wambisha) were present, probably in small numbers", and Collins and Clifton (1984: p. 10), that "it is perhaps only in the last 500 years that people have been cultivating in the region". By 1848 maize had taken over as the staple crop, and it remains so today (Harris 1972). By 1948 the Taita Hills had a human population of 40,000 (Harris 1972), and this continues to increase, with the population growth in 1971 in Werugha (Ngangao) being 6.3% (Tetlow 1987). The total population of the area is now estimated to be over 250,000, reaching densities of 1,416 people per km² (for example, in Mgange), according to an unpublished report by the East Africa Wildlife Society (<http://www.cheetah.demon.nl/taita.html>).

The Taita Hills forests have been fragmented for many years. Hopley (1895, p. 550) wrote that "the top of Mwatate mountain [Chawia] is partly covered with luxuriant growth of bracken fern", and that (p. 554) "the western face of Ndara is entirely uncultivated, and covered with dense bush, but the summit is

extensively cultivated, and is extremely fertile". Hildebrandt (1877) and Thompson (1887, p. 43) also mention cultivation on Sagalla. Edward Heller wrote in his diary (held by the Smithsonian Institution) in November 1911 (p. 68) that "the Wataita have cultivated the mountain slopes as high up as the head of all the streams and springs. They clean the slopes absolutely, even the stream beds are bare of brush". Loveridge (1937, p. 483) states that "The Teita porters who carried my loads up the almost precipitous ascent of Mount Mbololo, told me that they could remember when forest clothed the mountain side. Today only about a thousand acres of it survive as a narrow strip, two or three miles in length, running along the hog-backed ridge at 4,800 ft. This relic patch appeared to vary from one to two hundred yards in width. It is now under the protection of the Forestry Department of Kenya". Although the details of Loveridge's (1937) estimates are inconsistent (3 miles \times 200 yards = 218 acres, "1,000 acres"), it is clear that a considerable amount of forest was cleared from the Taita Hills in the pre-colonial era.

Nevertheless, several pieces of evidence do point to considerable recent loss of forest in the Taita Hills. Beentje (1987) estimates from early 1960s aerial photographs a forest cover of 145 ha on Vuria (which had been lost by the time that our photographs were taken in February 1967), and illustrates (p. 25) the extent of forest loss between 1962 and 1985 for five forests. By overlaying a grid and counting squares, these losses can be seen to be: Mbololo <50%, Ngangao 50%, Chawia 85%, Sagalla 95%, Vuria 99%. These losses were largely due to conversion to plantation. Early plant collections also indicate that the now-deforested Wesu, Yale and Susu once held forest (Beentje 1987).

By the 1950s the Kenyan Forest Department had begun to play a role in the Taita Hills forests through the establishment of plantations. However, it was not until the Presidential Decree of 1977 banning the cutting of indigenous trees without a licence (Beentje 1987) that much concern was given to the indigenous forests. The many abandoned saw pits in Ngangao, Chawia and Mbololo probably date to this time. A District Forest Officer was appointed to Wundanyi from Mombasa in 1981, and in 1982 the first forest guard was stationed at Ngangao (Tetlow 1987). Forest guards and other staff are now permanently stationed at Ngangao, Chawia, Fururu, Vuria, Sagalla and Ronge. Some of Ngangao was cleared by the local Mwarangu Youth Polytechnic in the mid-1980s (Beentje 1987, Tetlow 1987), and the collection of firewood and timber, both under licence and illegally, continues on a small scale in all forests. Nevertheless, the Forest Department does seem to have stalled the deforestation of the Taita Hills, at least for the present.

The legal history of the Taita Hills forests is difficult to trace. The County Council of Taita-Taveta approved 22 forest areas for gazettelement in 1973, including Ngangao (139 ha), Mbololo (370 ha), Sagalla (1280 ha) and Chawia (86 ha), and a further 10 areas were approved a year later (Beentje 1987). A total of 43 forests had been approved for gazettelement by 1984 (Tetlow 1987). However, none had been gazetted by 1987 (*contra* Collins and Clifton 1984, who state that Chawia was gazetted), by which time 15% of the area approved had been deforested (Beentje 1987). A total of 27 largely plantation forests (including Fururu, Macha and Mwachora) that were mapped by Mwangangi and Mwaura (1992–1993) and finally gazetted under legal notice 235/1991 (IUCN 1996) cover

an area of approximately 1,200 ha. However, we can find no record to date of the main natural forests of Sagalla, Mbololo, Ngangao, Chawia and Vuria ever having been gazetted.

History of biological exploration in the Taita Hills

The history and anthropology of the Taita Hills are well known (see reviews by Ehret and Nurse 1981 and by Harris 1978, respectively), but few biological studies have been carried out. We summarize what studies there have been below, with reference to the literature and to museum specimens in the AMNH (American Museum of Natural History, New York, U.S.A.), ANSP (Academy of Natural Sciences, Philadelphia, U.S.A.), BMNH (British Museum [Natural History], Tring, U.K.), FMNH (Field Museum of Natural History, Chicago, U.S.A.), MCZ (Museum of Comparative Zoology, Harvard, U.S.A.), NMK (National Museums of Kenya, Nairobi, Kenya), USNM (United States National Museum, Washington, D.C., U.S.A.), and YPM (Yale Peabody Museum, Newhaven, U.S.A.).

J. M. Hildebrandt collected around the base of the Taita Hills in 1877 (Cabanis 1878), F. J. Jackson collected at "Ndii", apparently at low altitude, on several occasions in the 1880s and 1890s (specimens mainly in FMNH), and D. Akeley collected around Voi in 1906 (FMNH). The first collection of birds from high altitude was that of Mearns, who described the Taita Thrush *Turdus helleri*, as "*Planesticus helleri*" (Mearns 1913a, No. 217722), and the Taita White-starred Robin *Pogonocichla stellata helleri* (Mearns 1913b, No. 217720) from Mbololo, in November 1911. He also described now-invalid races of Orange Ground Thrush "*Geocichla gurneyi raineyi*" (Mearns 1913a, No. 217721) and Hartlaub's Turaco "*Turacus hartlaubi crissalis*" (Mearns 1915, No. 217621). All of these specimens are in the USNM. Mearns also collected on Sagalla, although his only specimens in the USNM are of non-forest birds.

A. B. Percival collected a number of specimens for V. G. L. van Someren on Sagalla and elsewhere in 1918 and sporadically throughout the 1910s (specimens mainly in FMNH and ANSP with a few in AMNH). V. G. L. van Someren apparently visited the area in the 1920s (Beentje 1987) but does not seem to have recorded any ornithological observations. There is a specimen of Rufous-breasted Sparrowhawk *Accipiter rufiventris* in the FMNH (No. 192372) from 4 July 1927 that may have been collected by him. Peters and Loveridge (1936) collected on Mbololo in April 1934 (see also Loveridge 1937), describing the Taita White-eye *Zosterops silvanus* from there (Peters and Loveridge 1935). Their specimens are in the MCZ. Moreau (1937) collected in the main Taita Hills in November 1937 (specimens in BMNH), describing the Taita Apalis ("*Apalis murina fuscigularis*") as a result.

There are two specimens (Taita Thrush *Turdus helleri* No. ORN.S.35214 and Silvery-cheeked Hornbill *Bycanistes brevis* No. ORN.S.14990) in the YPM from the Taita Hills, plus another that is apparently lost (No. ORN.S.10744), collected by J. G. Williams in October 1938 according to F. Sibley (*in litt.* 1997). These are presumably part of the large collection of birds in the NMK from "Wundanyi Forest" and "Mbololo Forest" in the "Bura Hills" from October 1938 and from "Sagala" and "Kasigau" from November 1938. V. G. L. van Someren was

probably also involved with this expedition, as he describes Yellow-throated Woodland Warblers *Phylloscopus ruficapillus* from Mbololo as the (now-invalid) race *mbololo* in van Someren (1939). J. G. Williams also collected two *Turdus helleri* for the AMNH (No. 748460–1) on Mbololo on 27 January 1947, but a small series of birds from the main Taita Hills from June 1948 (FMNH) is not labelled. S. Keith collected a single *Turdus helleri* in Ngangao for the AMNH (No. 826954) on 9 January 1963, and A. D. Forbes-Watson collected a large series of birds in Ngangao and Chawia in August 1965 (specimens in USNM).

Considering other taxa, Peters collected numerous mammals, reptiles and amphibians in the 1870s at ‘Ndi’ on the northern slope of Mbololo, and Heller collected mammals on Ngangao and Mbololo with Mearns in 1911 (Allen and Lawrence 1936). In the Loveridge expedition, collections were also made of mammals (Allen and Lawrence 1936), crabs (Rathburn 1935), nematodes (Sandground 1936), oligochaeta (Michaelsen 1937) and reptiles and amphibians (Loveridge 1935, 1936a, 1936b). Beentje (1987, p. 42) lists the early botanical collections from the hills, all of which were post-1930 except for Hildebrandt’s (1877) collection.

More recently, brief visits have been made by various ornithologists and birdwatchers including D. A. Turner in (at least) 1973, 1974, 1978 and 1981 (Collar and Stuart 1985), Tetlow (1987) in July–August 1985, and the National Museums of Kenya in May–June 1985 (Beentje 1987, Beentje *et al.* 1987). These last two visits were general surveys with bird studies combined with work on butterflies and plants. There is a collection of lichens from the Taita Hills from December 1973 in the Botanical Museum, University of Oslo, Norway (<http://www.toyen.uio.no/botanisk/bot-mus/lav/bmltypee.htm>). Finally, Collins and Clifton (1984) searched for the endemic butterflies in July 1983, Oakley (1991) studied the swallowtail *Papilio nireus* over 1990, Hebrard *et al.* (1992) studied the endemic ceacilian *Afrocaecilia taitana*, and Mwangangi and Mwaura (1992–1993) surveyed the forests briefly as part of the Kenya Indigenous Forest Conservation Project in July 1993.

Fieldwork

We surveyed nearly all of the remaining natural forest of the Taita Hills (Brooks *et al.* 1996, 1997): five forest patches in the main massif (Ngangao, Chawia, Vuria, Fururu and Mwachora), two on Mbololo (Ronge Juu/Mwabira, and the main forest), and Sagalla. Fieldwork in each site included extensive surveys with the aim of locating every bird species present, intensive standardized mist-netting (schedules filed with the East African Natural History Society) and surveys of the structure and composition of the forests (to be published elsewhere). We captured no birds with obvious brood patches and very few in moult, but did catch a number of immature birds. We also interviewed local people about the historical extent of the forest. We obtained forest cover data from 1 : 50,000 aerial photographs for the main massif of the Taita Hills from February 1955, February 1967 and January 1969, and 1 : 250,000 Thematic Mapper satellite imagery for the whole area from May 1984. Finally, we searched the collections in the AMNH, ANSP, BMNH, FMNH, MCZ, NMK, USNM, YPM, and a number of other museums for Taita Hills forest birds.

Systematic list of forest species

Our categorization of forest specialist (FF) and generalist (F) species follows that of Bennun *et al.* (in press): the Taita Hills forest avifauna consists of 20 FF and 27 F species. Our global categories of threat follow Collar *et al.* (1994) and regional categories follow Bennun and Njoroge (1996); QSD (Quarter Square Degree) records follow Lewis and Pomeroy (1989). Distribution, taxonomy, nomenclature and systematic order follow Zimmerman *et al.* (1996), unless otherwise stated. Palearctic migrants, being absent during our survey, are not included. New QSD records are marked “*”, with updated QSD records in parentheses, probable breeding records (for non-migratory species with obvious immature plumages) with “P” and confirmed breeding records with “C”. QSD 101A covers all of the Taita Hills except for Sagalla, which falls in QSD 101B. We list non-forest species recorded during our fieldwork in an appendix.

Bat Hawk *Macheiramphus alcinus* F Regionally Near-Threatened

Although Lewis and Pomeroy (1989) map presence in QSD 101A and QSD 101B, the only record that we can find from the Taita Hills is of one collected in Ngangao on 15 August 1965 (USNM No. 519082).

Southern Banded Snake Eagle *Circaetus fasciatus* F *101A Globally Near-Threatened

We recorded a single individual of this species at Chawia on 15 July. It is a scarce coastal forest species in Kenya, with the only inland record being of one in riverine forest near Voi in March 1971 (Lack *et al.* 1980), and so it is likely that the species is merely a scarce wanderer to the Taita Hills. However, the presence of a substantial population in the East Usambara Mountains in Tanzania indicates the possibility that a tiny breeding population exists in the Taita Hills, and future surveys should search carefully for the species.

African Goshawk *Accipiter tachiro* F C101A

We found this species in Ngangao, Chawia, Vuria, Mwabira and Mbololo. It has previously been listed for the Taita Hills by Beentje (1987), and for QSD 101A and 101B by Lewis and Pomeroy (1989), although Tetlow (1987) did not find it at Ngangao and Zimmerman *et al.* (1996) do not map it for the area. We observed a pair at a nest with two recently fledged young on 6–12 August at Mwabira, and the species presumably breeds in most of the remaining forests of the Taita Hills.

Rufous-breasted Sparrowhawk *Accipiter rufiventris* F Regionally Near-Threatened

Lewis and Pomeroy (1989) map this species for QSD 101A and note that its “presence at around 1,500 m on the forest islands of the Taita Hills (D. A. Turner in litt.) compares to a record at 1,900 m in the Usambara Mts of adjacent NE

Tanzania". However, Zimmerman *et al.* (1996) do not map the species for the Taita Hills, and if present, it must be extremely scarce or, possibly, a vagrant. There is a specimen from in the FMNH (No. 192372) from 4 July 1927. We did not record the species.

Great Sparrowhawk *Accipiter melanoleucos* F C_{101A},*C_{101B}

We recorded *A. melanoleucos* at Ngangao, Chawia, Fururu, Sagalla and Mbololo, finding active nests at Chawia and Sagalla. *A. melanoleucos* therefore appears, like *A. tachiro*, to survive in small numbers in most of the Taita Hills forests.

Mountain Buzzard *Buteo oreophilus* FF *_{101A} Regionally Near-Threatened

We found *B. oreophilus* in small numbers at Ngangao, Chawia and Mbololo, and although not mapped for the area by Lewis and Pomeroy (1989) or Zimmerman *et al.* (1996), it was also recorded in the Taita Hills by Tetlow (1987) and Beentje (1987). It must be very scarce in the region, with just one or two pairs surviving in the three largest forests.

African Crowned Eagle *Stephanoaetus coronatus* FF C_{101A}

Regionally Vulnerable

We recorded *S. coronatus* quite regularly in and over Ngangao, Mwachora, Chawia, Fururu and Mbololo, observing display flights over Mwachora, Fururu and Mbololo, and an active nest, to which birds regularly took Sykes's monkeys *Cercopithecus mitis*, on 14–24 July at Chawia. Although not recorded in the area by Tetlow (1987) or mapped by Zimmerman *et al.* (1996), it is mapped for QSD 101A by Lewis and Pomeroy (1989) and was recorded by Beentje (1987). Considering the species's size, a few pairs seem to be surviving remarkably well in the remaining forest of the Taita Hills.

Crested Guineafowl *Guttera pucherani* F (101A)

Lewis and Pomeroy (1989) note this species for QSD 101A as historical presence only, in riparian thickets at Ngulia, although they do show recent records from this habitat from Voi (QSD 101B). Zimmerman *et al.* (1996) also omit the Taita Hills from the species's range. However, Beentje (1987) lists it as having been recorded by his expedition. We did not find the species in any forests, but recorded a party of *c.* 10 birds in dry scrub, at 1,000 m on the Voi–Ronge track on 16 August. Similarly, van Someren (1939) only found the species in low-altitude forest beneath the Chyulus, not in upland forest.

Tambourine Dove *Turtur tympanistra* F P_{101A}, P(101B)

Surprisingly, this species appeared to be considerably scarcer than *Aplopelia larvata* in the Taita Hills, and we found it at Ngangao, Sagalla and Mwabira only. van Someren (1939) found a similar situation in the Chyulu Hills. Lewis and Pomeroy (1989) map only historical occurrence in QSD 101B, from where Lack

et al. (1980) note a population decline. We caught immatures on 9 July in Ngangao and 1 August in Sagalla.

Lemon Dove *Aplopetia larvata* FF (101A), *P101B Regionally Near-Threatened

We found this species fairly commonly at Ngangao, Chawia, Sagalla, Mwabira, Ronge and Mbololo. Although mapped as only historically present in QSD 101A and absent from QSD 101B by Lewis and Pomeroy (1989), it therefore appears to be surviving well even in degraded forest patches throughout the Taita Hills. We caught a single immature at Sagalla on 1 August.

Hartlaub's Turaco *Tauraco hartlaubi* FF Regional Responsibility

T. hartlaubi remains a common and noisy resident in all but the smallest patches of forest in the Taita Hills, and we found it at Ngangao, Chawia, Fururu, Vuria, Mwabira, Ronge Juu and Mbololo.

African Emerald Cuckoo *Chrysococcyx cupreus* F

Britton (1980), Lewis and Pomeroy (1989) and Zimmerman *et al.* (1996) all list this species for the Taita Hills, and although we did not record it during our fieldwork, we heard a bird singing in Vuria during a brief visit on 15 December 1996. There are also two specimens from "Ndi" from 14 December 1888 (Cornell University Museum No. CU4279, FMNH No. 112538). It is presumably a seasonal wanderer to the area.

African Wood Owl *Strix woodfordii* F

We found this species quite commonly at Ngangao, Chawia, Mwabira and Mbololo, and it thus appears to be surviving well in the forests of the Taita Hills. Lewis and Pomeroy (1989) map its historical presence in QSD 101B, but we did not find it on Sagalla.

Scarce Swift *Schoutedenapus myoptilus* F

We recorded two birds on 21 July low over forest at Chawia. Although Zimmerman *et al.* (1996) do not map it for the area, D. A. Turner recently recorded birds in QSD 101A (Oyugi 1994). The species is also known from Mt Kasigau (QSD 101D) and from the Usambara Mountains in Tanzania (Lewis and Pomeroy 1989), and so its presence in the Taita Hills is not surprising. It is presumably a scarce wanderer to the area.

Silvery-cheeked Hornbill *Bycanistes brevis* F

We recorded *B. brevis* commonly at Ngangao, Chawia, Mwabira, Ronge Juu and Mbololo, and also in Wundanyi town, although not in Sagalla; it is mapped for QSD 101B by Lewis and Pomeroy (1989). Although not listed by Beentje (1987),

it appears to be a common (although presumably non-breeding) bird in the Taita Hills.

White-eared Barbet *Stactolaema leucotis* F

Lewis and Pomeroy (1989) show the historical presence of this species in QSD 101A, and Britton (1980), Moore (1984) and Zimmerman *et al.* (1996) list it as occurring in the Taita Hills. However, the only record of the species that we can trace is of a possible individual seen at Ngangao on 9 July 1984 by Tetlow (1987).

Moustached Green Tinkerbird *Pogoniulus leucomystax* FF

Regional Responsibility

Although we did not record this elusive species during fieldwork (at which time we were not familiar with its call), J. A. Tobias (pers. comm.) heard a single bird during a brief visit to Ngangao on 10 December 1996. Both Tetlow (1987) and S. Whitehouse (according to his unpublished report, "Birding in Kenya") recorded it in forest in the Taita Hills, and it is listed as present by Britton (1980), Moore (1984), Lewis and Pomeroy (1989) and Zimmerman *et al.* (1996). It is presumably a scarce resident of the larger patches of forest in the area.

Mountain Greenbul *Andropadus nigriceps* FF

Regional Responsibility

This species is apparently a scarce wanderer from Tanzania north to the Taita Hills, where the one substantiated record is of a bird on 14 August 1978, in company of two *A. milanjensis* (Turner 1979). Moore (1984), Beentje (1987), Lewis and Pomeroy (1989) and Zimmerman *et al.* (1996) also list the species as present, presumably based on this record.

Stripe-cheeked Greenbul *Andropadus milanjensis* FF

A. milanjensis remains common in the larger patches of forest of the Taita Hills, and we found it in Ngangao, Chawia, Fururu, Ronge Juu and Mbololo.

Grey-olive Greenbul *Phyllastrephus cerviniventris* F *101A, *101B

Regionally Near-Threatened

This species has not been previously recorded in the Taita Hills, but we found it not uncommonly at 1,200–1,500 m in Sagalla, Mwabira and Ronge Juu. These records fit neatly into the distribution of the species on the eastern part of the Kenya–Tanzania border. The preference of the species for riverine forest may explain its survival in the heavily deforested lower altitudes of the Taita Hills, as most of the remaining forest here is along streams. A. B. Percival collected two apparently overlooked specimens in the "Teita Hills" in December 1918 (AMNH No. 566711; ANSP No. 95993), and also one in "Tsavo" on 1 November 1917 (ANSP No. 95994).

Cabanis's Greenbul *Phyllastrephus cabanisi* FF *101B

P. cabanisi is common in most of the Taita Hills forest patches, and we found it at Ngangao, Chawia, Fururu, Sagalla, Mwabira, Ronge Juu and Mbololo.

Yellow-bellied Greenbul *Chlorocichla flaviventris* F *101A

Although not shown for QSD 101A by Lewis and Pomeroy (1989), Zimmerman *et al.* (1996) note its presence at Sagalla and it is mapped as recently present in QSD 101B (Lewis and Pomeroy 1989). We found it at Sagalla, Mwabira and Ronge Juu, and, like *Phyllastrephus cerviniventris*, it appears to remain quite common in the remaining low altitude forest of the Taita Hills.

Eastern Nicator *Nicator gularis* F

We recorded this species in low numbers at Sagalla, where it has been noted to occur by Zimmerman *et al.* (1996). It is mapped for QSD 101A by Lewis and Pomeroy (1989), but we did not record it in the rest of the Taita Hills.

White-starred Robin *Pogonocichla stellata* F *P101B

We found this species commonly in every forest patch surveyed, with immature birds on 8 July (Ngangao, 3), 26 July (Vuria, 1), 30 July (Sagalla, 1), 31 July (Sagalla, 1), 1 August (Sagalla, 2), 2 August (Sagalla, 1), 9 August (Mwabira, 1) and 11 August (Mwabira, 1).

Red-capped Robin-Chat *Cossypha natalensis* F

We recorded *C. natalensis* in small numbers at Sagalla, although not elsewhere in the Taita Hills, and there are four old specimens from Sagalla, from August (AMNH No. 580540, FMNH No. 198120) and November (NMK No. 6777 and No. 12119), and also one from "Mgama, Teita" from 2 July 1919 (ANSP No. 96678). These records fit into the apparently resident population of the species along the eastern part of the Kenya-Tanzania border (Zimmerman *et al.* 1996) although previous records from QSDs 101A and 101B probably refer to migrants (Lewis and Pomeroy 1989).

Rüppell's Robin-Chat *Cossypha semirufa* F P101A, *101B

We recorded this species in small numbers in all forests except for Vuria, and it seems that it remains a relatively common bird in the Taita Hills forests. We captured an immature bird on 9 July at Ngangao.

Orange Ground Thrush *Zoothera gurneyi* FF P101A Regionally Near-Threatened

We found this species in low numbers in deep forest understorey at Ngangao and Mbololo. In both sites it was scarcer than Taita Thrush *Turdus helleri*, and being restricted to primary forest, it must be highly threatened in the area. The

Taita Hills are the only Kenyan locality for this Tanzanian race *Z. g. otomitra*. Tetlow (1987) suggested that micro-habitat differences may separate this species from *T. helleri*, but we frequently observed and caught the two species in the same vicinity. We caught a single immature on 8 July in Ngangao.

Taita Thrush *Turdus helleri* FF P101A

Globally Critical

We found this Taita Hills endemic in three forests only: Ngangao, Chawia and Mbololo. Although it was most often observed and captured in shady forest understorey, we also saw birds at fruiting trees on forest edge on several occasions (Brooks 1997). We recorded juvenile birds in Ngangao (8 July) and Chawia (17 and 23 July), and similarly Tetlow (1987) captured an immature bird in Ngangao in July or August 1985. Although considered by some authorities to be a race of Olive Thrush *T. olivaceus* (e.g. Sibley and Monroe 1990), it does not respond to tape recordings of that species (Collar *et al.* 1994), and is now widely thought to be a distinct species (e.g. Zimmerman *et al.* 1996). Reports of *T. helleri* from Mt Kasigau (Collar and Stuart 1985) require confirmation (Zimmerman *et al.* 1996), while a report from Mt Kilimanjaro (Bednall 1958) is now considered to be extremely unlikely (Collar and Stuart 1985). While not uncommon in the three forests where it is known to survive, we strongly recommend the retention of *T. helleri* as globally Critical, considering its tiny range, tiny population size and recent rapid population decline following forest clearance over the last three decades.

African Dusky Flycatcher *Muscicapa adusta* F

M. adusta remains relatively common in the forest edge of the surviving large patches of Taita Hills forest, and we found it at Ngangao, Chawia and Mbololo.

Ashy Flycatcher *Muscicapa caerulescens* F (101A)

We recorded a single individual, in scrub below Ngangao, on 13 July. Lewis and Pomeroy (1989) map its historical presence in QSD 101A and recent presence in QSD 101B, but the only other records that we can trace are specimens from Sagalla from 8 August 1918 (FMNH No. 197159) and November 1938 (NMK). It seems that the species survives, maybe in low numbers, in scrub in the heavily deforested lower altitudes of the Taita Hills.

Yellow-throated Woodland Warbler *Phylloscopus ruficapillus* F

This species is dependent on the larger remaining forest patches of the Taita Hills, the only site at which it occurs in Kenya, but we found it relatively commonly at Ngangao, Chawia and Mbololo.

Evergreen Forest Warbler *Bradypterus lopezi* FF

Regionally Near-Threatened

We found *B. lopezi* to be relatively common in forest undergrowth, but only at Ngangao, Chawia, Fururu and Vuria, not in the eastern portion of the Taita Hills. Considering this tiny range, the species must be under considerable local threat.

Black-headed Apalis *Apalis melanocephala* FF (101A), *101B

We found *A. melanocephala* in small numbers in forest edge at Chawia, Fururu and Sagalla. It appears to be a low-density resident of the surviving low-altitude forest of the Taita Hills. Considering its presence in Sagalla and the local distribution of species such as *Phyllastrephus cerviniventris* and *Chlorocichla flaviventris* here and in Mwabira and Ronge Juu, its absence from these last two sites is surprising.

Taita Apalis *Apalis [thoracica] fuscigularis* FF

Globally Critical

We recorded the Taita endemic *A. [thoracica] fuscigularis* quite commonly in forest understorey in Ngangao, Chawia, Fururu and Vuria. It seems that, like *Bradypterus lopezi*, the species is restricted to the western portion of the Taita Hills, and, again like that species, it must be under serious threat here, despite the fact that we generally recorded it on the forest edge. We therefore recommend that it is retained as globally Critical, considering its tiny range and population, and, presumably, recent population decline. Many authorities (e.g. Sibley and Monroe 1990, Zimmerman *et al.* 1996) consider this distinctive taxon to be a Taita Hills endemic race of the southern Bar-throated Apalis *A. thoracica*, but we follow Collar *et al.* (1994) who consider it a full species.

Taita White-eye *Zosterops [poliogaster] silvanus* F

Globally Critical

We recorded the Taita Hills near-endemic *Z. [poliogaster] silvanus* commonly in every forest patch apart from Sagalla, and also in scrub below Ngangao and in remnant trees in Wundanyi town. It was most frequently encountered at Ngangao (where we found it to be the commonest bird) but was relatively scarce at Mbololo and so its abundance is apparently not closely related to forest size or quality. Birds were seen in singles, pairs and large flocks of up to c. 25 birds. Birds were occasionally seen in mixed flocks, where they loosely associated with the following species: Yellow-throated Woodland Warbler *Phylloscopus ruficapillus*, Black-headed Apalis *Apalis melanocephala*, Abyssinian White-eye *Zosterops abyssinnica*, Collared Sunbird *Anthreptes collaris* and Olive Sunbird *Nectarinia olivacea*.

We recommend that the species be down-listed from Critical (Collar *et al.* 1994) to Endangered, based on criterion B (extent of occurrence >100 but <5,000 km², and also area of occupancy >10 but <500 km²), subcriteria B1 (severe fragmentation into <5 locations) and B2a, b and c (continuing decline observed in extent of occurrence, area of occupancy, and area, extent and quality of habitat). It does not (*contra* Collar *et al.* 1994) qualify under criteria C2b (as the species is not restricted to a single population) or D1 (as there are >250 – and, indeed, probably >1,000 – individuals), but does qualify under D2, as the population occurs at only three locations: Mt Kasigau (Collar *et al.* 1994), Mbololo and the main Taita Hills massif.

White-tailed Crested Flycatcher *Trochocerus albonotatus* FF

Four specimens in the NMK (No. 6821–4) from October 1938, “Wundanyi Forest, Bura Hills” and one in the USNM (No. 521187) from Ngangao, 15 August 1965

are the only records from the Taita Hills (Lewis and Pomeroy 1989). The occurrence of the species in the Taita Hills is not in itself particularly surprising, considering the presence of a population in the Usambaras. However, the failure of any recent surveys to record the species suggest that it has either become extinct in the area, which would be surprising considering its preference elsewhere in Kenya for high-altitude forest and tolerance of forest degradation (Zimmerman *et al.* 1996), or that it is an occasional wanderer from Tanzania (which seems unlikely).

Blue-mantled Crested Flycatcher *Trochocerus cyanomelas* FF (101A), *P101B

We found this species quite commonly in forest understorey at Sagalla, Mwabira and Ronge, and like *Phyllastrephus cerviniventris* and *Chlorocichla flaviventris*, it appears to be a resident of the surviving low altitude forests of the Taita Hills. There is an overlooked specimen from November 1938 from Sagalla (NMK No. 6565). We caught an immature at Sagalla on 1 August.

Black-throated Wattle-eye *Platysteira peltata* F *P101B

We found *P. peltata* in small numbers in Sagalla, including an immature on 1 August, where it has not previously been recorded.

Black-fronted Bush-Shrike *Malaconotus nigrifrons* FF

Britton (1980), Lewis and Pomeroy (1989) and Zimmerman *et al.* (1986) list the species as present the Taita Hills. However, we can only trace historical specimens, from October 1938 (FMNH No. 201512-3), 3 June 1948 (FMNH No. 201279) and August 1965 (USNM No. 521615-7), and it seems that the species is now extinct in the Taita Hills.

Four-coloured Bush-Shrike *Malaconotus quadricolor* FF

Regionally Near-Threatened

There are numerous early specimens from low altitudes in the Taita Hills (ANSP, NMK, FMNH), with exact localities including Sagalla (NMK No. 6766-68, No. 6772; FMNH No. 201344-6), Bura (ANSP) and Mwatate (ANSP). There is a single recent record from QSD 101A (Lewis and Pomeroy 1989), but this concerns a bird trapped at Ngulia in December 1973 (Backhurst and Pearson 1977), and Lack *et al.* (1980) state that the species "formerly occurred rarely along the Voi River. No recent records". The species was probably never common in the moist forest of the Taita Hills, and may well now be extinct in the area.

Black-backed Puffback *Dryoscopus cubla* F

We recorded this species fairly commonly in forest edge at Ngangao, Chawia, Mwabira, Ronge Juu and Mbololo, and also in dry forest at 1,000 m at Choke.

Abbott's Starling *Cinnyricinclus femoralis* FF *101A Globally Vulnerable

We recorded this species at Chawia only, with up to 20 birds in the forest canopy on 15, 16 and 17 July, and three on 25 August. Reasonable numbers of both Violet-backed *C. leucogaster* and Sharpe's *C. sharpii* Starlings were also present at the same time. The species is known from the Chyulu Hills (van Someren 1939), possibly as a seasonal visitor from the population on nearby Mt Kilimanjaro (Turner 1977). The Chawia birds could therefore be either scarce residents or seasonal immigrants: in either case, the area may be of significant importance for this globally threatened species.

Sharpe's Starling *Cinnyricinclus sharpii* FF Regionally Near-Threatened

We found *C. sharpii* in small numbers in forest canopy at Ngangao and Chawia. The only other records that we can trace are two specimens in the NMK (No. 6388–9) from Wundanyi, October 1938, and presumably the species, like *C. femoralis*, is a rare resident in or scarce visitor to the region.

Collared Sunbird *Anthreptes collaris* F

We found this species in small numbers at Mwabira, Ronge Juu and Mbololo. Its absence from the western half of the Taita Hills is surprising and our failure to record it on Sagalla even more so. Lewis and Pomeroy (1989) do map records from QSD 101B, but these are presumably from Tsavo East National Park, where it is "an uncommon resident along rivers and around the Park HQ" (Lack *et al.* 1980); there are also specimens of the species from Sagalla from August 1918 (FMNH No. 202183, AMNH No. 665832) and November 1938 (NMK No. 5676).

Olive Sunbird *Nectarinia olivacea* FF (101B)

N. olivacea is the commonest forest bird through the Taita Hills as a whole, and we recorded it in large numbers in forest at every site. Lewis and Pomeroy (1989) map only historical presence in QSD 101B, where Lack *et al.* (1980) noted its apparent extinction in the Voi River forest.

Eastern Double-collared Sunbird *Nectarinia mediocris* F Regional Responsibility

We recorded *N. mediocris* at sites in the western half of the Taita Hills only: Ngangao, Chawia and Vuria. Its distribution in the area appears, interestingly, to be complementary with Collared Sunbird *A. collaris*. The two species commonly occur together elsewhere (Zimmerman *et al.* 1996), and so this may simply be an altitudinal effect, for *A. collaris* is typical of the coastal lowlands while *N. mediocris* is a montane species. However, *N. mediocris* is known from as low as 900 m in the Taitas (Britton 1980), and we found *A. collaris* at 1,800 m in Mbololo.

Green-backed Twinspot *Mandingoa nitidula* FF *101B

We found this species in small numbers in most forest patches: Ngangao, Chawia, Fururu, Vuria, Sagalla, Mwabira and Mbololo. Lewis and Pomeroy (1989) do not map the species for QSD 101B, and Zimmerman *et al.* (1996) show it to be only a visitor to the region, but we found a number of subadult birds (1, Chawia, 22 Jul; 1, Vuria, 26 July; 1, Sagalla, 1 August; 2, Mwabira, 11 August; 1, Mbololo, 14 August) and it is probably a relatively common resident in the area.

Peter's Twinspot *Hypargos niveoguttatus* F

We recorded *H. niveoguttatus* fairly commonly in forest undergrowth in Sagalla and Mwabira, suggesting that it is not an uncommon resident in the remaining low-altitude moist forest of the Taita Hills. We captured immature birds on 30 July, Sagalla (1) and 11 August, Mwabira (2).

The following forest generalists (F) have ranges that encompass the Taita Hills (Zimmerman *et al.* 1996) and have been recorded in QSD 101A and 101B and so could possibly occur, but we have not been able to trace any records: African Hobby *Falco cuvieri* (QSD 101B only), African Green Pigeon *Treron calva*, Red-chested Cuckoo *Cuculus solitarius*, Yellowbill *Ceuthmochares aereus*, Böhm's Spinetail *Neafrapus boehmi* (QSD 101B only), Mottled Spinetail *Telacanthura ussheri* (QSD 101B only), Narina's Trogon *Apaloderma narina*, Yellow-rumped Tinkerbird *Pogoniulus bilineatus*, and Red-tailed Ant Thrush *Neocossyphus rufus* (FF, QSD 101B only). All of these records are thus presumably based on their sporadic occurrence in Tsavo East National Park, mainly in riverine forest (Lack *et al.* 1980).

In addition, records of five upland forest species have been claimed from the Taita Hills but not substantiated, and their occurrence in the region is doubtful: three forest specialists (FF), Eastern Bronze-naped Pigeon *Columba delegorguei* (Moore 1984), African Hill Babbler *Pseudoalcippe abyssinica* and Brown Woodland Warbler *Phylloscopus umbrovirens* (Beentje 1987) and two forest generalists (F), White-eyed Slaty Flycatcher *Melaeornis fischeri* (Tetlow 1987), and the regionally Vulnerable Ayres's Hawk-Eagle *Hieraetus ayersii* (Moore 1984, Tetlow 1987, Beentje 1987). The closest populations of all save *Columba delegorguei* (for which the closest locality is Kilimanjaro) are in the Chyulu Hills (Zimmerman *et al.* 1996).

Turner (1979) suggests that Yellow-streaked Greenbul *Phyllastrephus flavostriatus* (FF) may occur in the Taita area, but there are no known records and the nearest populations are in the South Pare and Usambara Mountains. There is a single specimen from Mt Kasigau in the FMNH (No. 196465), collected by (or maybe for) V. G. L. van Someren in November 1938 (Turner 1979). Finally, there is a mysterious specimen of a Purple-throated Cuckoo-Shrike *Campephaga quisqualina* (ANSP No. 97625), collected in the "Teita Hills" or "Leita Hills" in December 1918 by A. B. Percival. The range of this species does not come close to the Taita Hills, so maybe the specimen was in fact from the Loita Hills in south-western Kenya, where Percival collected in June–August 1918 (ANSP).

Discussion

It is beyond doubt that the Taita Hills are a critically important area for conservation, due to their high degree of biological uniqueness and the fact that only a tiny area of natural habitat remains. Besides three endemic species, these forests hold two further species listed in *Birds to Watch 2* (Collar *et al.* 1994) and 14 more listed on the regional *Red Data List* (Bennun and Njoroge 1996). Forest clearance over the last century has almost certainly caused the extinction of three species in the Taita Hills: White-tailed Crested Flycatcher *Trochocerus albonotatus*, Black-fronted Bush-Shrike *Malaconotus nigrifrons* and Four-coloured Bush-Shrike *M. quadricolor*. Furthermore, the fact that we added no fewer than 33 QSD records illustrates the potential for further new discoveries in the area. Action must be taken to conserve this biodiversity before it is too late.

A number of factors give cause for optimism. First, it seems that the forests of the Taita Hills have been fragmented to a high degree for a considerable time. While this gives no room for complacency, for it is imperative that they are not further fragmented, it does give hope for the medium-term survival of the area's resident forest species.

Second, the listing of its endemic species as Critical (Collar *et al.* 1994) has focused conservation action on the Taita Hills. The National Museums of Kenya are starting a major project to assess the biological impacts of forest fragmentation in the hills, and the East African Wildlife Society has initiated a community conservation project in the Taitas (<http://www.cheetah.demon.nl/taita.html>). These projects deserve extensive support in their efforts to protect the biodiversity of the Taita Hills.

Most importantly, the Forest Department should be commended for their careful management the Taita Hills forests, for biodiversity in the indigenous forests and for production in the plantations. Again, while there is no room for complacency, it is very encouraging that the last two decades have seen forestry policy shift to take the protection of indigenous forests into account.

Key recommendations for the conservation of the Taita Hills forests, based on our observations, the literature, and an unpublished report on a visit to the Taita Hills in April 1994 by I. Illingworth, are as follows:

- Urgent implementation of the biological research planned in the forests by the National Museums of Kenya and associated institutions.
- Urgent implementation of the outreach to local communities as planned by the East African Wildlife Society, in particular, to discuss the benefits of conserving the remaining forests.
- Based on the results of these projects, management plans for the forests should be drawn up in close conjunction with the Forest Department and the local communities. One possibility is to have them designated as National Monuments under the Antiquities and Museums Act (1983). This could overlap with their Forest Department status but would limit the extent to which they could be disturbed (L. A. Bennun *in litt.*). The legal status of the natural forests under the Forest Department should also be clarified and the forests gazetted as soon as possible.
- In the longer term, forest management should include the removal of exotic trees from *within* the forests (although those *bordering* the forests should be

maintained as buffer zones) and the reforestation of cleared areas with native trees. Sustainable forest use, based on ecotourism and the harvest of forest products should also be encouraged.

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Appendix. Non-forest species recorded 4 July–19 August 1996 in the Taita Hills (above 1,000 m).

Grey Heron <i>Ardea cinerea</i>	Zanzibar Sombre Greenbul <i>Andropadus importunus</i>
Hammerkop <i>Scopus umbretta</i>	Common Bulbul <i>Pycnonotus barbatus</i> f
Woolly-necked Stork <i>Ciconia episcopus</i>	Cape Robin-Chat <i>Cossypha caffra</i> f
Black Kite <i>Milvus migrans</i>	Common Stonechat <i>Saxicola torquata</i>
Egyptian Vulture <i>Neophron percnopterus</i>	Cliff Chat <i>Thamnolaea cinnamomeiventris</i> (101A)
Hooded Vulture <i>Necrosyrtes monachus</i> f	Pale Flycatcher <i>Bradornis pallidus</i>
Lappet-faced Vulture <i>Torgos tracheliotus</i>	Lead-coloured Flycatcher <i>Myioparus plumbeus</i> f (101A)
Brown Snake Eagle <i>Circaetus cinereus</i>	Singing Cisticola <i>Cisticola cantans</i>
African Harrier-Hawk <i>Polyborides typus</i> f	Tawny-flanked Prinia <i>Prinia subflava</i> f
Augur Buzzard <i>Buteo augur</i>	Grey-backed Camaroptera <i>Camaroptera brachyura</i> f
Wahlberg's Eagle <i>Aquila wahlbergi</i>	Abyssinian White-eye <i>Zosterops abyssinicus</i> f
Verreaux's Eagle <i>Aquila verreauxii</i>	White-bellied Tit <i>Parus albiventris</i> f
Long-crested Eagle <i>Lophaelus occipitalis</i> f	Taita Fiscal <i>Lanius dorsalis</i>
Lanner Falcon <i>Falco biarmicus</i>	Common Fiscal <i>Lanius collaris</i> (101A)
Black Cuckoo <i>Cuculus clamorus</i> f	Tropical Boubou <i>Lanius aethiopicus</i> f
Mottled Swift <i>Apus aequatorialis</i>	Pied Crow <i>Corvus albus</i>
Little Swift <i>Apus affinis</i>	White-necked Raven <i>Corvus albicollis</i>
Speckled Mousebird <i>Colius striatus</i>	Red-winged Starling <i>Onychognathus</i> f
Grey-headed Kingfisher <i>Halcyon leucocephala</i> f	Violet-backed Starling <i>Cinnyricinclus leucogaster</i> f
Spot-flanked Barbet <i>Tricholaema lacrymosa</i>	Amethyst Sunbird <i>Nectarinia amethystina</i> f

Brown-breasted Barbet <i>Lybius melanopterus</i> f (101A)	Variable Sunbird <i>Nectarinia venusta</i>
Lesser Honeyguide <i>Indicator minor</i> f	House Sparrow <i>Passer domesticus</i>
African Pied Wagtail <i>Motacilla aguimp</i>	Baglafaecht Weaver <i>Ploceus baglafaecht</i> f
Striped Pipit <i>Anthus lineiventris</i>	Yellow-bellied Waxbill <i>Estrilda quartinia</i> f
Red-rumped Swallow <i>Hirundo daurica</i>	Black-and-white Mannikin <i>Lonchura bicolor</i> f
Lesser Striped Swallow <i>Hirundo abyssinica</i>	Pin-tailed Whydah <i>Vidua macroura</i>
Rock Martin <i>Hirundo fuligula</i>	Yellow-rumped Seedeater <i>Serinus reichenowi</i>

f, "Forest visitors" (Bennun *et al.*, in press).

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THOMAS BROOKS, JOHN KAGECHE KIHURIA and CHRISTINE WILDER
Ornithology Department, National Museums of Kenya, P. O. Box 40658, Nairobi, Kenya (e-mail: kbirds@users.africaonline.co.ke) and Department of Ecology and Evolutionary Biology, 569 Dabney Hall, University of Tennessee, Knoxville, TN 37996-1610, U.S.A. (e-mail: tbrooks@utkux.utk.edu).

LUC LENS

Laboratory of Animal Ecology, Department of Biology, University of Antwerp, UIA, B-2610, Wilrijk, Belgium (e-mail: llens@uia.ua.ac.be).

JIM BARNES and ROGER BARNES
4 Claremont Drive, Leeds LS6 4ED, U.K.