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Survey of Birds in Mdando Forest in the Southern Highlands, Tanzania

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Summary

We conducted an avian survey of Mdando Forest in Tanzania´s Southern Highlands in September and November 2022, and May 2023, using mist nets and opportunistic observations from camps inside the forest at 1750 m, 1950 m and 2050 m elevation. We recorded 61 species which included nine species that previously have not been reported from Mdando, including Black-headed Apalis *Apalis melanocephala* and Sharpe's Akalat *Sheppardia sharpei*. Conversely, we failed to find three forest species that are recorded from Mdando. Of the total of 64 bird species known from the forest, 36 are classified as forest specialists, 24 are forest generalists and four are forest visitors. The forest avifauna included range-restricted species such as Iringa Akalat *Sheppardia lowei* and Spot-throat *Modulatrix stictigula*.

The non-forested Makambako highlands (the "Makambako Gap") have often been seen as a faunal barrier separating the Southern Highlands from the more species-rich East Arc Mountains. However, 36 of the 44 montane forest specialists known from the Udzungwa Mountains, the southernmost and closest area of the East Arc Mountains, have now been recorded from Mdando Forest, which shows that there is a large overlap in the montane avifauna on both sides of the Makambako Gap, suggesting a comparatively recent forest connection.

Keywords: Tanzania, Mdando Forest, montane forest birds, Southern Highlands, biogeography

Introduction

Mdando Forest (09°47′ S, 34°49′ E; 1750–2200 m) is a montane rainforest located in the Southern Highlands (formerly called the Livingstone Mountains) in southwestern Tanzania, 45 km south of the municipality of Njombe (Fig. 1). It is the largest forested area in Tanzania's Southern Highlands.

To our knowledge, only three ornithologists have previously studied the birds of Mdando Forest. In July 1952 Danish collector Thorkild Andersen (or possibly his collector) visited the site and obtained a small collection of specimens, later deposited at Natural History Museum of Denmark. In October 1962 German collector Gerd Heinrich collected birds in Mdando Forest over nine days for the Peabody Museum of Natural History and two papers were later published with information on selected species (Ripley & Heinrich 1966, 1969). In November 2003, Tanzanian ornithologist Jacob Kiure worked in Mdando for a month and made a collection of specimens as well as a list of the bird species he recorded. This list was forwarded to the Natural History Museum of Denmark, but the records have never been published.

In September and November 2022, and May 2023, we conducted avian surveys in Mdando Forest. Our goal was to investigate the current avifauna, and the distribution within the forest of some of the rare and poorly-known species, as well as to look into the extent of avian links between the Southern Highlands and the nearby East Arc Mountains.

Study area

Mdando Forest is located in the Southern Highlands about 40 km east of Lake Malawi (Fig. 1). The underlying rocks are Precambrian, and the Southern Highlands are believed to have developed over tens, and even hundreds of millions of years (Griffiths 1993). The Mdando montane area is orientated northwest-southeast (Fig. 2) with the elevational range of the forest being 1750–2200 m, but with areas of the southeast only reaching 1900 m. The forested area extends linearly for approximately 16 km with a maximum width of 2 to 4 km (Fig. 2) and falls entirely within the Mdando Forest Reserve (5140 ha). In the past, Mdando Forest was probably considerably larger and likely also covered areas at lower altitudes.

At the time of our study most of the forest above approximately 1900 m (~3300 ha) lacked any evidence of recent felling of either trees or poles, but the area has been subject to commercial felling of specific tree species in several areas in the past (e.g., in the 1970s) and the forest therefore lacks large specimen trees in some areas. Only in the southeastern end of the forest from 1750 to 1900 m did we see any recent sign of disturbance and loss of forest.

About 1000 ha of secondary forest and scrub is found mainly on the southwestern slopes, and the southeastern parts the forest is fragmented by fairly large stretches of grassland (Fig. 2). A few old logging trails can still be recognized, otherwise access to the forest is by paths.

The lightly disturbed forest consists of a varied closed-canopy montane rainforest with many large woody species including *Croton* sp., *Syzygium* sp., *Zanthoxylum* sp. And *Hagenia abyssinica*. In the southeastern parts, at around 1750–1850 m elevation, there are sections with particularly tall trees, reaching 30–35 m. In most parts of the forest, a sub-canopy is formed of smaller trees and shrubs, which include *Trichilia emetica*, *Xymalos monospora*, *Maytenus acuminata*, *Olinia rochetiana*, *Pavetta* sp., *Psychotria* spp., *Clausena anisata*, *Morella salicifolia*, and *Dracaena afromontana.* In the central and southeastern parts there are also areas of grass and herbaceous glades with *Dracaena steudneri* and *Lobelia giberroa.* There are several streams and a number of moist areas, mostly surrounded by patches of the tree fern *Cyathea manniana*. Even in November, at the end of the dry season, most of the streams were water-bearing.

Methods

We collected information on the avifauna during three visits; a reconnaissance trip by EAM on 20–21 September 2022, a survey by all authors on 2–15 November 2022 and a visit on 13–14 May 2023 by EAM with particular focus on collecting more information on the status of the rare and poorly-known Tanzanian forest species which we recorded during our stay in November 2022.

During the November visit we camped inside the forest at 1750 m, 1950 m and 2050 m (Fig. 2). This study period was timed to occur just before the start of the rainy season when singing and activity of forest birds is at its peak. Mist nets were set around each camp for 4–5 days. Up to 15 mist nests (2.5 x 12 m, 5 shelves) were used. The nets were usually opened at first light and kept open all day. All captured birds

were measured (weight and wing length) and breeding condition was assessed. Before the birds were released, the tip of the right outermost retrice was cut off with scissors so that if re-trapped we could recognize birds we had already caught once. Such feather clipping is considered a low-risk method for marking birds by British Trust for Ornithology (BTO 2023).

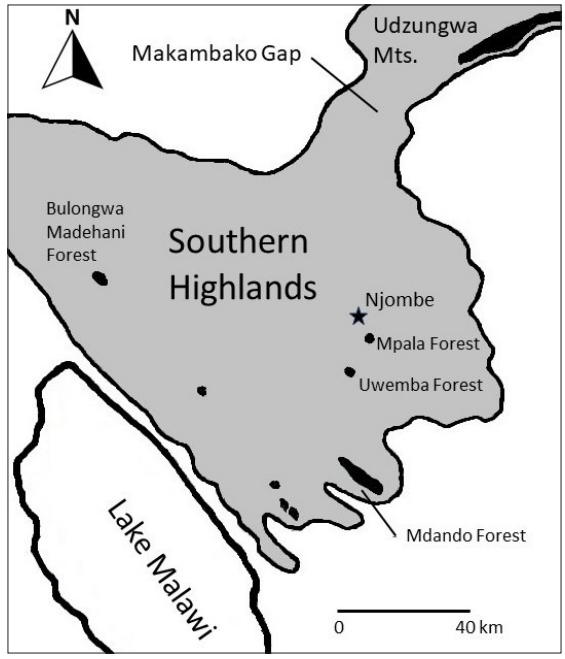

Figure 1. The Southern Highlands of southwestern Tanzania (areas above 1500 m are shaded grey and montane forest is shaded black).

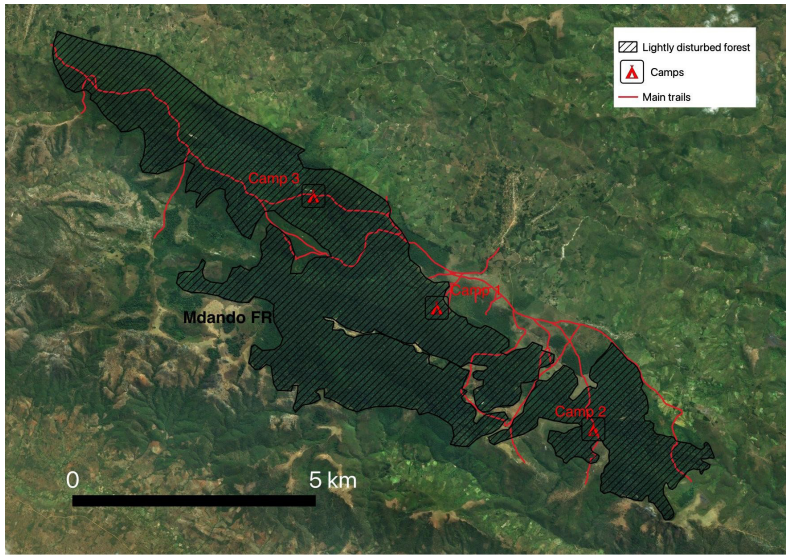

Figure 2. The extent of lightly disturbed forest (hatched area) in Mdando Forest and the position of field camps and main trails.

We also conducted surveys on all mornings from first light at 05:30, usually until noon, and again from around 15:00 until dark. On some days we made observations throughout the day. Forest species were recorded on an opportunistic basis along existing trails and animal tracks. Audio playback of song and calls was also used to locate shy and skulking forest specialists.

Complete lists of Andersen's, Heinrich's and Kiure's collections were sourced from the Global Biodiversity Information Facility—GBIF and from the note prepared by J. Kiure on his observations in 2003 (see Acknowledgements).

Results

The mist nets were operated for 14 472 net-metre hours (4824 at 1750 m; 5784 at 1950 m and 3864 at 2050 m) and 244 individual birds were caught, representing 25 species (Table 1; taxonomy and nomenclature follow Gill *et al*. 2023). By far the most frequently caught species was White-starred Robin *Pogonocichla stellata* with 64 individuals netted. The second most numerous were Little Greenbul *Eurillas virens* and Red-faced Crimsonwing *Cryptospiza reichenovii* with 29 individuals of each netted.

Table 1. Bird species and numbers caught in mist-nets at Mdando Forest at the three camps.

Netted species	1750 m	1950 m	2050 m	Total
Lemon Dove *Aplopelia larvata*	2	-	3	5
Tambourine Dove *Turtur tympanistria*	-	-	1	1
Yellow-rumped Tinkerbird *Pogoniulus bilineatus*	-	-	1	1
Dark Batis *Batis crypta*	6	7	3	16
Fülleborn's Boubou *Laniarius fuelleborni*	-	-	1	1
White-tailed Crested Flycatcher *Elminia albonotatus*	-	1	-	1
Shelley's Greenbul *Arizelocichla masukuensis*	5	7	4	16
Yellow-throated Greenbul *Arizelocichla chlorigula*	1	1	3	5
Little Greenbul *Eurillas virens*	19	2	8	29
Placid Greenbul *Phyllastrephus placidus*	3	5	4	12
Yellow-throated Woodland Warbler *Phylloscopus ruficapilla*	4	1	-	5
Evergreen Forest Warbler *Bradypterus lopezi*	5	3	-	8
Red-capped Forest Warbler *Artisornis metopias*	-	2	-	2
Eurasian Blackcap *Sylvia atricapilla*	-	-	1	1
African Hill Babbler *Sylvia abyssinica*	-	1	-	1
Southern Yellow White-eye *Zosterops anderssoni*	-	2	2	4
Orange Ground Thrush *Geokichla gurneyi*	1	-	1	2
White-chested Alethe *Chamaetylas fuelleborni*	5	3	5	13
White-starred Robin *Pogonocichla stellata*	20	21	23	64
Sharpe's Akalat *Sheppardia sharpei*	4	4	-	8
Olive Sunbird *Cyanomitra olivacea*	7	-	-	7
Forest Double-collared Sunbird *Cinnyris fuelleborni*	1	2	-	3
Green Twinspot *Mandingoa nitidula*	2	-	1	3
Red-faced Crimsonwing *Cryptospiza reichenovii*	4	-	25	29
Oriole Finch *Linurgus olivaceus*	3	4	-	7
Total	92	66	86	244

In total, we recorded 61 species in our surveys which included nine species that have not previously been reported from Mdando Forest (Appendix 1). With African Broadbill *Smithornis capenses* and Stripe-faced Greenbul *Arizelocichla striifacies* observed by J. Kiure but not by us and Kipengere Seedeater *Crithagra melanochroa* collected by G. Heinrich but not recorded by us, the total number of forest bird species known from Mdando Forest is 64 (Appendix 1). Of these, 36 are forest specialists, 24 forest generalists and 4 forest visitors according to the categorizations established by Bennun *et al*. (1996) and Burgess *et al*. (2007). Among the forest generalists we recorded one Palaearctic migrant, the Eurasian Blackcap *Sylvia atricapilla*.

Notes on select species

The accounts below provide additional details for a selection of species, including those with restricted global ranges where we found the status in Mdando different from other locations, and those for which we recorded breeding.

Fülleborn's Boubou *Laniarius fuelleborni*

A common bird usually recorded in pairs throughout the forest from 1750 to 2200 m. It was mostly detected by its loud calls.

Shelley's Greenbul *Arizelocichla masukuensis*

The commonest of the *Arizelocichla* greenbuls in November. It was usually observed in pairs and small groups in the lower to mid-storey forest from 1800 to 2200 m.

Yellow-throated Greenbul *Arizelocichla chlorigula*

Fairly common from the lowest forest tracts at 1750 m altitude up to the highest at 2200 m, typically observed in pairs or small (family) groups. This greenbul is often the most common greenbul in Tanzanian forests above 2000 m (e.g., Werema *et al*. 2021) but this is not the case in Mdando Forest. This is possibly due to competition from Shelley's and especially Little Greenbul, the latter being surprisingly numerous in the highest montane forest. On 11 November at 2100 m a nest containing two eggs was discovered in a tuft of tall grass about 40 cm above the ground.

Stripe-faced Greenbul *Arizelocichla striifacies*

This greenbul was recorded once in Mdando Forest in 2003, but not during our fieldwork in 2022–2023. It is common and widespread in Tanzania's Eastern Arc Mountains from the Udzungwas towards the northeast. In addition to the single Mdando record, Southern Highlands records of this greenbul are limited to two specimens (held at the Natural History Museum, Denmark) collected at 1850 m in 2008 in the small Maguli-Bulongwa Forest Reserve (also called Bulongwa-Madehani Forest Reserve; Fig. 1) some 90 km to the northwest. Since this greenbul occurs at highest densities at 1500–1750 m in the Eastern Arc Mountains and has an upper altitudinal limit of around 1950 m (Romdal 2001), it seems possible that the disappearance of forest below 1750 m could have caused it to go extinct in Mdando Forest. Other possibilities are that the record from 2003 was a wanderer as this greenbul is known to be able to move up to 200 km from the nearest montane forest (Mlingwa 1996), or that it was misidentified.

Little Greenbul *Eurillas virens*

The most common greenbul in Mdando Forest, in November it was heard and

observed every day and was among the most frequently netted species (Table 1). Two recently fledged young were captured on 7 November at 1750 m. Little Greenbul was most numerous below 1950 m but even at 2150 m it was observed and netted regularly. It was unexpected to commonly find this greenbul in this high-altitude forest as it is most numerous in Tanzania and Malawi in lowland and mid-altitude forests below 1900 m (Britton 1980, Dowsett-Lemaire & Dowsett 2006).

Apalis species *Apalis* spp.
Chapin's Apalis *Apalis chapini* is common in Mdando Forest, usually seen moving about in pairs or small parties in the canopy from about 1800–2200 m. Its altitudinal range overlaps broadly with Bar-throated Apalis *A. thoracica* (1750–2200 m), the other common apalis in Mdando, but this species occurs mostly at mid-stratum. Chapin's Apalis also overlaps in altitude with Black-headed Apalis *A. melanocephala* (1750–2100 m) which we found to be less frequent. Brown-headed Apalis *A. alticola* seems to be local and uncommon in Mdando Forest; it was recorded only a few times in the southeastern parts of the forest at 1750–1850 m.

Red-capped Forest Warbler *Artisornis metopias*
Two were netted together in dense understory at 1950 m on 4 November. Two more were heard singing in duet at 2100 m on 19 November. These few records suggest that the species is quite rare in Mdando Forest.

Eurasian Blackcap *Sylvia atricapilla*
A male was netted on 12 November inside closed forest at 1950 m.

Spot-throat *Modulatrix stictigula*
Only a single bird was heard during the two weeks of field work in November while three birds were recorded on 13–14 May. All our records were from the northern part of the forest at altitudes between 1900 and 2200 m, and they suggest that Spot-throat is a low-density species at Mdando.

Waller's Starling *Onychognathus walleri*
A common species in Mdando Forest that was seen or heard on most days. A pair was observed entering a (nest) hole in dead tree trunk on 3–4 November at 2000 m.

Kenrick's Starling *Poeoptera kenricki*
Mostly observed in pairs high in treetops, but a few times flocks of 3 and 4 birds were seen flying over. A pair was observed entering a (nest) hole in a large, dead branch ~15 m above the ground at 2050 m on 6 November. Mdando Forest is at the southern limit of this starling's range.

White-chested Alethe *Chamaetylas fuelleborni*
Fairly common from 1750–2100 m and recorded daily by its call and song. It was also netted at all camps.

Olive-flanked Ground Robin *Cossypha anomala*
Four singing birds were recorded 300–500 m apart in closed forest at 2100–2150 m on 13 November while only a single bird was recorded in the same area on 15 November. On 13–14 May, seven birds were observed or heard from 1925–2200 m altitude. This suggests that Olive-flanked Ground Robin is locally quite common.

White-starred Robin *Pogonocichla stellata*

Widespread and abundant, with singing males heard throughout the forest in November. In November we netted 64 individuals of which 18 were (non-breeding) subadults. The highest numbers (adults and subadults) were netted at 2050 m (Table 1). One nest, hidden in undergrowth and containing three eggs, was found at 2100 m on 14 November.

Sharpe's Akalat *Sheppardia sharpei*

This species, previously unrecorded at Mdando, was commonly heard and seen from 1750–2000 m and four individuals were netted at each of the camps at 1750 m and 1950 m (Table 1). Above 2000 m it appears to be rare or very local with only two birds recorded near our camp at 2050 m on 13 November, and single birds at 2100 m on 14 November and 2150 m on 13 May.

Iringa Akalat *Sheppardia lowei*

On the last day of our two-week stay in November, we located a single pair; a male singing actively and with what was probably the female moving nearby in dense tree ferns along a small stream at 2050 m. This male's song seemed somewhat different from the recording from the Udzungwa Mountains we had been using for audio-playback. In May, we therefore used a recording of the male from Mdando for playback and so located two pairs and a single bird in two days in the same part of the forest at 1950–2050 m. The location of one of these pairs strongly suggests that it was the same pair as we encountered in November. Despite the larger number recorded in May, Iringa Akalat seems to have a very small population in Mdando Forest.

Forest Double-collared Sunbird *Cinnyris fuelleborni*

Fairly common from 1750–2200 m, and mostly observed when feeding at flowering trees and bushes, together with Collared Sunbird *Hedydipna collaris* and Olive Sunbird *Cyanomitra olivacea*. Only a single bird was heard singing briefly in November.

Dark-backed Weaver *Ploceus bicolor*

Observed in small numbers from 1750–2050 m, usually in pairs. Nest building was observed in tree at ~1900 m on 7 November.

Discussion

Except for African Broadbill, Stripe-faced Greenbul and Kipengere Seedeater, which were reported from Mdando Forest by Kiure and Heinrich (Appendix 1) but which we failed to record, we are confident that we detected all or nearly all forest bird species at Mdando Forest during our field visits and surveys in 2022 and 2023. We may have missed the seedeater because it is a bird of the forest edge where we only spent limited time. African Broadbill can be elusive and difficult to detect if not displaying, and it seems possible that the Stripe-cheeked Greenbul may have disappeared from Mdando Forest, if it has ever been a resident (vs. a wanderer) there.

Among the rare and poorly-known Tanzanian forest species in Mdando Forest, Iringa Akalat has the smallest global distribution. This Tanzania endemic is known only from seven forest tracts in the Udzungwa Mountains (Jensen *et al*. 2020, Jensen & Boesman 2022) and from the Southern Highlands where it has been recorded in forest patches at Mpala (Lynes 1934, Baker & Baker 2002) and Uwemba (skin at Natural

History Museum of Denmark collected by T. Andersen in 1950) close to Njombe (Fig. 1), and in Mdando Forest. Its conservation status is ranked as Globally Vulnerable owing to its small range and because populations are presumed to be in decline from ongoing loss and degradation of montane forests (BirdLife International 2023).

In 1962 Heinrich collected four specimens of Iringa Akalat in Mdando Forest in nine days (Ripley & Heinrich 1966) but neither he nor J. Kiure (in 2003) recorded its close relative, Sharpe's Akalat, from this forest. In contrast, we recorded only five individual Iringa Akalats (two pairs and a singleton) during 18 field days (over three visits) but found Sharpe's Akalat common up to 2000 m. This could indicate that the population of Iringa Akalat in Mdando Forest has declined over time and that of Sharpe's Akalat has increased. In the Udzungwa Mountains, where these two *Sheppardia* species also occur, they are generally separated by altitude with Iringa Akalat occurring higher than Sharpe's Akalat (Jensen & Brøgger-Jensen 1992, Dinesen *et al*. 1993). Further to the northeast in the Usambara Mountains, the mean elevational range of Sharpe's Akalat has shifted 42 m upslope over a 39-year period (1980–2019) while the lower elevational range limit shifted 219 m upslope during the same period (Neate-Clegg *et al*. 2021). This shift is believed to be a response to climatic warming (Neate-Clegg *et al*. 2021), and climate change may thus also be affecting its elevational limit in Mdando Forest. If Sharpe's Akalats in Mdando Forest has responded in a similar way to the population in the Usambara Mountains, it may have become more numerous at higher elevations in recent decades, and this could have pushed the altitudinal range of Iringa Akalat further upslope. Since the forest above 2000 m, where Sharpe's Akalat is rare, is small in Mdando Forest, suitable habitat for Iringa Akalat has become very limited, which may explain why it has apparently become scarcer.

Other forest species with limited ranges that occur in Mdando Forest are Spot-throat, Red-capped Forest Warbler and Olive-flanked Ground Robin. Compared with forest at similar altitude in eastern Tanzania, we found Spot-throat and Red-capped Forest Warbler to be unexpectedly scarce and local in Mdando, given the size and quality of the forest, suggesting that their populations are small and vulnerable. Olive-flanked Ground Robin was restricted to the highest forest of the northeast but was relatively frequent there.

Biogeography

From the Southern Highlands, a narrow highland region stretches northeast to the Udzungwa Mountains (Fig. 1), the Eastern Arc Mountain range immediately to the north. This highland has a drier climate than both the Southern Highlands and the Udzungwa Mountains, and lacks forest. Therefore, this so called "Makambako Gap", named after the town of Makambako in the middle of the highland area, is often considered to be the dividing line between the species-rich Eastern Arc Mountains with high numbers of forest endemics, and the more species-poor Southern Highlands (Burgess *et al*. 2007).

However, questions have been raised as to whether the Makambako Gap has really acted as a faunal barrier (Davenport 2015), as an increasing number of animals have now been found to be widespread on both sides. This includes amphibians (Menegon *et al*. 2020), chameleons (Menegon *et al*. 2015), mouse shrews (Stanley & Esselstyn 2010) and rodents and shrews (Cuypers *et al*. 2022). There are also no bird species endemic to the Southern Highlands. However, of the 44 montane forest specialists known from the Udzungwa Mountains (Jensen *et al*. 2020) 36 are also

recorded in Mdando Forest (Appendix 1). This shows that a large part of the montane forest bird species is the same despite being separated by the Makambako Gap.

Studies of the variation in the water level in Lake Malawi over time have shown strong evidence for high-frequency, high-magnitude variability over the last 800 000 years, caused by large-scale climatic variations (Lyons *et al*. 2015). These changes have also controlled the receding and expanding of forests within the Lake Malawi watershed in which cycles of increased water levels are mirrored by forest expansion (Ivory *et al*. 2018) with far reaching implications for forest bird distributions. For example, at the Last Glacial Maximum ~20 000 years ago, the water level in Lake Malawi dropped to 75–100 m below modern levels (Lyons *et al*. 2011) suggesting a climate that was so dry that forest in the Southern Highlands may have disappeared or receded to only tiny patches, causing most or all forest bird species to become extinct locally. However, this was followed by a considerably wetter period and during the subsequent 9000 years the lake level increased to modern levels (Lyons *et al*. 2011). This most likely led forest to re-establish in the Southern Highlands and during periods of particularly high precipitation, forest probably expanded beyond today's range and established at the Makambako highland connecting the Southern Highlands with the Udzungwa Mountains. This would have permitted the montane avifauna of the Udzungwa Mountains, where forests are believed to have persisted for millions of years (Fjeldså *et al*. 2010), to have re-colonized the Southern Highlands. There are thus strong indications that the Makambako highlands have only intermittently comprised a barrier for montane forest birds.

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Appendix 1.

Bird species recorded in Mdando Forest. Eastern Arc near-endemics (as defined in Burgess *et al*. 2007) are shaded. Species new to Mdando are shown in bold. Also included are approximate estimates of abundance based on how often a given species was observed, heard and/or caught in mist-nets. Taxonomy and nomenclature follow Gill *et al*. (2023) and definitions of abundance and forest dependence follow Bennun *et al*. (1996) and Burgess *et al*. (2007) as follows: o = recorded, xx = common in the right habitat, x = rare/low density species, FF = Forest specialist strictly confined to forest, F = Forest generalist mainly in forest, f = forest visitor.

Species	Forest dependence category	Years of observation			
		1952[1]	1962[2]	2003[3]	2022-2023
Montane Nightjar *Caprimulgus poliocephalus*	F			o	xx
Livingstone's Turaco *Tauraco livingstonii*	FF	o	o	o	xx
Barred Long-tailed Cuckoo *Cercococcyx montanus*	FF				xx
African Olive Pigeon *Columba arquatrix*	FF		o	o	xx
Eastern Bronze-naped Pigeon *Columba delegorguei*	FF				xx
Lemon Dove *Columba larvata*	FF			o	xx
Tambourine Dove *Turtur tympanistria*	F			o	x
Crowned Eagle *Stephanoaetus coronatus*	FF			o	x
African Goshawk *Accipiter tachiro*	F			o	xx
Mountain Buzzard *Buteo oreophilus*	FF			o	xx
African Wood Owl *Strix woodfordii*	F				xx
Bar-tailed Trogon *Apaloderma vittatum*	FF		o	o	xx
Crowned Hornbill *Lophoceros alboterminatus*	f			o	xx
Silvery-cheeked Hornbill *Bycanistes brevis*	F			o	xx
Moustached Tinkerbird *Pogoniulus leucomystax*	FF		o		xx
Yellow-rumped Tinkerbird *Pogoniulus bilineatus*	F			o	xx
Olive Woodpecker *Dendropicos griseocephalus*	FF		o	o	x
African Broadbill *Smithornis capenses*	FF			o	
Dark Batis *Batis crypta*	FF	o	o	o	xx
Black-fronted Bushshrike *Chlorophoneus nigrifrons*	FF		o	o	xx
Black-backed Puffback *Dryoscopus cubla*	F			o	xx
Fülleborn's Boubou *Laniarius fuelleborni*	FF		o	o	xx
Grey Cuckooshrike *Ceblepyris caesius*	FF				x
Common Square-tailed Drongo *Dicrurus ludwigii*	F			o	xx
African Paradise Flycatcher *Terpsiphone viridis*	f			o	x
White-tailed Crested Flycatcher *Elminia albonotata*	FF		o	o	xx
Shelley's Greenbul *Arizelocichla masukuensis*	FF		o	o	xx
Yellow-throated Greenbul *Arizelocichla chlorigula*	FF	o	o	o	xx
Stripe-faced Greenbul *Arizelocichla striifacies*	FF			o	
Little Greenbul *Eurillas virens*	F			o	xx
Placid Greenbul *Phyllastrephus placidus*	FF		o	o	xx
Yellow-throated Woodland Warbler *Phylloscopus ruficapilla*	F		o	o	xx

Species	Forest dependence category	Years of observation			
		1952[1]	1962[2]	2003[3]	2022-2023
Evergreen Forest Warbler *Bradypterus lopezi*	FF		o	o	xx
Bar-throated Apalis *Apalis thoracica*	FF		o	o	xx
Black-headed Apalis *Apalis melanocephala*	FF				x
Chapin's Apalis *Apalis chapini*	FF		o		xx
Brown-headed Apalis *Apalis alticola*	F			o	x
Green-backed Camaroptera *Camaroptera brachyura*	f			o	x
Red-capped Forest Warbler *Artisornis metopias*	FF		o	o	x
Eurasian Blackcap *Sylvia atricapilla*	F				x
African Hill Babbler *Sylvia abyssinica*	FF		o	o	xx
Southern Yellow White-eye *Zosterops anderssoni*	F		o	o	xx
Spot-throat *Modulatrix stictigula*	FF		o	o	x
Waller's Starling *Onychognathus walleri*	FF		o		xx
Kenrick's Starling *Poeoptera kenricki*	FF	o			x
Orange Ground Thrush *Geokichla gurneyi*	FF		o	o	xx
Abyssinian Thrush *Turdus abyssinicus nyikae*	F			o	x
Ashy Flycatcher *Muscicapa caerulescens*	F				x
African Dusky Flycatcher *Muscicapa adusta*	F			o	x
White-chested Alethe *Chamaetylas fuelleborni*	FF		o	o	xx
Olive-flanked Ground Robin *Cossypha anomala*	F		o		x
White-starred Robin *Pogonocichla stellata*	F		o	o	xx
Sharpe's Akalat *Sheppardia sharpei*	FF				xx
Iringa Akalat *Sheppardia lowei*	FF		o	o	x
Collared Sunbird *Hedydipna collaris*	F		o	o	xx
Green-headed Sunbird *Cyanomitra verticalis*	F				x
Olive Sunbird *Cyanomitra olivacea*	FF			o	xx
Forest Double-collared Sunbird *Cinnyris fuelleborni*	FF	o	o	o	xx
Dark-backed Weaver *Ploceus bicolor*	F			o	x
Green Twinspot *Mandingoa nitidula*	FF			o	x
Red-faced Crimsonwing *Cryptospiza reichenovii*	F		o	o	xx
Mountain Wagtail *Motacilla clara*	F			o	xx
Oriole Finch *Linurgus olivaceus*	F		o	o	xx
Kipengere Seedeater *Crithagra melanochroa*	f		o		

[1]Collected by Th. Andersen

[2]Collected by G. Heinrich

[3]Recorded/collected by J. Kiure