

Results of an ornithological survey in the Ukaguru and East Usambara mountains, Tanzania

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The members of the Cambridge Tanzania Rainforest Survey 1990 visited Mtai Forest (4°52'S, 38°47'E) in the East Usambara Mountains from 7 July to 14 August and the main block of forest in the Ukaguru Mountains (6°21'S, 38°47'E) from 23 August to 14 September 1990. Birds, reptiles and amphibians were studied in both forests, and butterfly and fish surveys carried out in Mtai. The final expedition report is to be published as a BirdLife International study report¹.

The two ornithologists combined direct observation with mist-netting. The key results of the bird study are presented here, along with some notes on the conservation prospects for each forest.

Background

The birds of the East and West Usambaras have been comparatively well studied, in particular by Moreau, who lived there in the 1930s (e.g. Moreau 1935, 1966) and more recently by Stuart & Hutton (1978) and Stuart (1983). The fauna and flora are very diverse, including perhaps the richest forest avifauna in the Eastern Arc zoogeographical region (Rodgers & Homewood 1982). Collar & Andrew (1988) list seven threatened and three near-threatened species there, including the Usambara endemics (Nduk Eagle Owl *Bubo vosseleri* and the Usambara Ground Robin *Dryocichloides montanus*). Work in the East Usambaras has mostly been on the plateau around Amani, in submontane forest at 900–1050 m, with few reports from areas at different altitudes to the north and east. Mount Mtai is the most northeasterly of the Usambara forests, covering only 2900 ha, and largely lowland in character. There is a small submontane area between 900 m and the ridge-top at 1050 m.

There are only three published accounts of Ukaguru birds (Fuggles-Couchman 1939, Friedmann & Stager 1964, Stuart & van der Willigen 1979), all referring to brief visits and only the third involving any mist-netting. Collar & Andrew (1988) list one threatened and two near-threatened species, while N. E. and E. M. Baker found a second threatened species—the Iringa Ground Robin *Dryocichloides lowei*—on a brief visit in 1989 (verbally, 1990). The remaining forest there runs from 1500–2600 m, is montane in character and still fairly extensive (over 10 000 ha, Stuart & van der Willigen 1979, Evans *et al* in prep.).

Records of particular interest

We recorded 91 species in the forested areas of Mt Mtai (35 d of fieldwork) and 61 in the forests of the Ukagurus (22 d of fieldwork). Complete species lists are given in our final project report (Evans *et al.* in prep.). Our records of seldom-reported species and observations of breeding for all species are discussed below. Our fieldwork was conducted in the dry season, so few birds were breeding.

¹ Available from BirdLife International, 32 Cambridge Road, Girton, Cambridge, CB3 0PJ, England

Species names, preceding reference numbers and notes on distribution and abundance are from Britton (1980). Categories of threat on the right are from Collar & Andrew (1988).

Mt Mtai records

52. *Bostrychia olivacea* Green Ibis

One on 1 August and two on 2 August in dense ridge-top forest at 1000 m. Also heard on four nights in July at 350 m.

415. *Bubo (poensis) vosseleri* Nduk Eagle Owl

Threatened

One probably heard on 5 August at 1000 m. A faint recording of an eagle owl's call was obtained from deep in the forest, an area where no other species is likely to occur. The status of this little-known and rare bird is unclear. Britton (1980), following White (1965), treats it as an isolated subspecies of the West African *B. poensis* (Fraser's Eagle Owl), some other authors as a separate species, *B. vosseleri* (Collar & Stuart 1985, Collar & Andrew 1988). In any case, it is limited in East Africa, to the Usambaras where it has been rarely recorded, from 900–1500 m (Britton 1980, Collar & Stuart 1985). There is a 'possible' record from the Nguru Mountains (Moreau 1964).

640. *Psalidoprocne pristoptera* Black Rough-wing

Common along the ridge-top at 900–1000 m. Breeding recorded (many dependent juveniles were seen).

–. *Swynnertonia swynnertonii* Swynnerton's Forest Robin

Threatened

Two, an adult male and an adult female, were netted at 550 m in July. They appear to represent a new population and subspecies, some 400 km north of the nearest known birds in the Uzungwas (Stuart & Jensen 1981, Anderson & Evans in prep.).

1046. *Prionops scopifrons* Chestnut-fronted Helmet Shrike

Flocks of 15–20 recorded at c. 400 m in mid August. Small numbers of Green Wood Hoopoes *Phoeniculus purpureus* were associating with the flocks.

1068. *Poeoptera kenricki* Kenrick's Starling

Sizeable flocks (>20) around 950 m, and one bird netted.

1083. *Anthreptes neglectus* Uluguru Violet-backed Sunbird

Near-threatened

One in a mixed species flock at 400 m on 10 August.

1088. *Anthreptes reichenowi* Plain-backed Sunbird

Near-threatened

Singles in mixed species flocks at 400 m on 10 and 11 August.

1089. *Anthreptes rubritorques* Banded Green Sunbird

Threatened

Two small parties, one of five birds in a clearing at 1000 m seen on several days, and another of two birds in a mixed species flock at 900 m.

1242. *Mandingoa nitidula* Green-backed Twinspot

Present from 350–950 m.

1259. *Spermophaga ruficapilla* Red-headed Bluebill

Four individuals of the isolated subspecies *cana* caught, at 350 m, 550 m (two) and 950 m.

Ukaguru records**382. *Tauraco livingstonii* Livingstone's Turaco**

Pair observed in courtship display at 1850 m in early September.

759. *Dryocichloides lowei* Iringa Ground Robin**Threatened**

Six netted and two seen at 1800 m in August. Britton (1980) records the species only above 2000 m. Caught in nets in the open along the road through the forest and in one instance two were watched feeding among herbs and low branches at the roadside.

766. *Modulatrix stictigula* Spot-throat

Five netted at 1800 and 1500 m.

830. *Bathmocercus winifredae* Mrs Moreau's Warbler**Threatened**

Five netted, at 1500 m (two) and 1850 m (three).

844. *Chloropeta similis* Mountain Yellow Warbler

Twice seen at 1700 m at forest edge. First record for the Ukagurus.

933. *Melaenornis chocolatina* White-eyed Slaty Flycatcher

One pair nest-building in bushes by a road at 1800 m on 28 August.

1110. *Nectarinia moreau* Moreau's Sunbird**Near-threatened**

One of the commonest species at 1850 m, also present at 1500 m. Two occupied nests were found at 1800 m and one was seen in construction at 1550 m.

1242. *Mandingoa nitidula* Green-backed Twinspot

Seen at 1850 m and caught at 1500 m.

1279. *Linurgus olivaceus* Oriole Finch

Several seen and singles ringed at 1800 m and 1600 m.

Ringling records*Methods*

Nets were set, successively at a range of altitudes in each forest and were moved every few days, to maximize catch rates. Five or six nets were used at Mtai, ten to 12 in the Ukagurus. One 10-m-long net was used in both areas, the rest being 12-m. Nets were opened at dawn, closed before dusk and occasionally closed during the middle of the day when bird activity was low. Nets were checked every hour and birds processed in camp or at a temporary ringing station. Descriptions of all netting sites, with the number of net-metre-hours operated at each, are given in Table 1. No systematic results were required from the ringing, the object being to locate as many species as possible. The secondary aim of the mist-netting was to provide data for the ringing scheme of

eastern Africa, therefore all birds caught were fitted with metal rings inscribed INFORM MUSEUM NAIROBI and measurements taken of weight, wing, tarsus, tail and bill. Moults, brood-patch and fat scores were also noted.

Table 1 summarizes the netting operation and Table 2 indicates the number of individuals of each species we ringed in each forest, and at which ringing sites. Ringing sites were mapped and given a unique reference number to allow future workers to identify them; the maps are available from the authors.

Table 1. *Details of the ringing sites*

Site	altitude (m)	habitat	No. of net-m-h	No. of birds caught	No. of species
Mtai 1	350	Lowland forest edge	1825	30	13
Mtai 2	550	Lowland forest interior	1575	15	6
Mtai 3	900	Submontane forest edge (ridge-top)	1970	39	16
Mtai 4	950	Submontane forest interior (ridge-top)	1360	99	14
Mtai 5	850	Submontane forest interior	289	22	7
Subtotals			7019	205	33
Ukaguru 11800		Montane forest interior (+ open road)	5555	106	23
Ukaguru 21850		Montane forest interior (+ open road)	3615	70	17
Ukaguru 31500		Montane forest interior	5340	148	24
Subtotals			14510	324	33
Totals			21529	529	53

Table 2. *Mist-netting totals and sites for each species*

Species	Mtai		Ukagurus	
	No.	site(s)	No.	site(s)
African Goshawk <i>Accipiter tachiro</i>	—	—	1	3
Tambourine Dove <i>Turtur tympanistria</i>	1	4	1	3
White-browed Coucal <i>Centropus superciliosus</i>	1	3	—	—
Bar-tailed Trogon <i>Apaloderma vittatum</i>	—	—	1	3
Pygmy Kingfisher <i>Ispidina picta</i>	1	1	—	—
Green Barbet <i>Buccanodon olivaceum</i>	3	3	—	—
Moustached Green Tinkerbird <i>Pogoniulus leucomystax</i>	—	—	1	1
African Hill Babbler <i>Alcippe abyssinica</i>	—	—	12	1,2,3
Shelley's Greenbul <i>Andropadus masukuensis</i>	52	1,4,5	28	1,2,3

continued

Species	Mtai		Ukagurus	
	No.	site(s)	No.	site(s)
Stripe-cheeked Greenbul <i>A. milanjensis</i>	3	2,4	6	3
Mountain Greenbul <i>A. tephrolaemus</i>	—	—	3	1,2
Little Greenbul <i>A. virens</i>	31	1-5	17	1,2,3
Nicator <i>Nicator chloris</i>	1	1	—	—
Yellow-streaked Greenbul <i>Phyllastrephus flavostriatus</i>	3	4,5	—	—
Olive Mountain Greenbul <i>P. placidus</i>	11	2,4,5	36	1,2,3
Common Bulbul <i>Pycnonotus barbatus</i>	4	3	—	—
White-chested Alethe <i>Alethe fuelleborni</i>	2	2,4	12	1,2,3
Robin Chat <i>Cossypha caffra</i>	—	—	2	1
Red-capped Robin Chat <i>C. natalensis</i>	3	1,3	—	—
Olive-flanked Robin Chat <i>Dryocichloides anomalus</i>	—	—	2	1
Iringa Ground Robin <i>D. lowei</i>	—	—	5	1,2
Spot-throat <i>Modulatrix stictigula</i>	—	—	4	2,3
White-starred Forest Robin <i>Pogonocichla stellata</i>	—	—	8	1,2,3
Sharpe's Akalat <i>Sheppardia sharpei</i>	2	4	—	—
Swynnerton's Forest Robin <i>Swynnertonia swynnertoni</i>	2	2	—	—
Orange Ground Thrush <i>Turdus gurneyi</i>	—	—	1	1
Bar-throated Apalis <i>Apalis thoracica</i>	—	—	6	1,2,3
Mrs Moreau's Warbler <i>Bathmocercus winifredae</i>	—	—	5	1,3
Evergreen Forest Warbler <i>Bradypterus barratti</i>	—	—	5	1,3
Grey-backed Camaroptera <i>Camaroptera brachyura</i>	6	1,3	—	—
Red-capped Forest Warbler <i>Orthotomus metopias</i>	—	—	8	2,3
Tawny-flanked Prinia <i>Prinia subflava</i>	1	3	—	—
White-eyed Slaty Flycatcher <i>Melaenornis chocolatina</i>	—	—	1	1
Forest Batis <i>Batis mixta</i>	4	2,4,5	26	1,2,3
East Coast Batis <i>B. soror</i>	1	3	—	—
Paradise Flycatcher <i>Terpsiphone viridis</i>	2	1,2	1	3
White-tailed Crested Flycatcher <i>Trochocercus albonotatus</i>	1	3	13	1,2,3
Crested Flycatcher <i>T. cyanomelas</i>	2	1,2	—	—
Black-backed Puffback <i>Dryoscopus cubla</i>	1	3	—	—
Fülleborn's Black Boubou <i>Laniarius fuelleborni</i>	—	—	7	1,2,3
Kenrick's Starling <i>Poeoptera kenricki</i>	1	3	—	—
Collared Sunbird <i>Anthreptes collaris</i>	2	3	—	—
Moreau's Sunbird <i>Nectarinia moreaui</i>	—	—	37	1,2,3
Olive Sunbird <i>N. olivacea</i>	41	1-5	31	1,2,3
Yellow White-eye <i>Zosterops senegalensis</i>	—	—	2	2
Dark-backed Weaver <i>Ploceus bicolor</i>	2	2	—	—
Red-faced Crimson-wing <i>Cryptospiza reichenovii</i>	8	3,4,5	31	1,2,3
Common Waxbill <i>Estrilda astrild</i>	1	3	—	—
Peters' Twinspot <i>Hypargos niveoguttatus</i>	1	1	—	—
Green-backed Twinspot <i>Mandingoa nitidula</i>	5	3,4	2	3
Red-headed Bluebill <i>Spermophaga ruficapilla</i>	4	1,2,4	—	—
Rufous-backed Mannikin <i>Lonchura bicolor</i>	2	3	—	—
Oriole Finch <i>Linurgus olivaceus</i>	—	—	2	1,3

Brood patch scores

Birds in the hand were scored on a 0–5 scale for brood patch (0 = no brood patch, 5 = very extensive brood patch) as detailed in Baker (1989). An enlarged and vascularized brood patch (scoring 4 or 5) may indicate that a bird has eggs in the nest and is incubating. Birds caught with this feature are listed in Table 3.

Table 3. *Birds netted with brood patch indicating breeding*

Species	site	No.	sex	altitude (m)	date
Bar-tailed Trogon	Ukagurus	1	m	1500	early Sep
Moustached Green Tinkerbird	Ukagurus	1	–	1800	late Aug
Shelley's Greenbul	Mtai	3	–	850, 950	early Aug
Shelley's Greenbul	Ukagurus	1	–	1800	late Aug
Little Greenbul	Ukagurus	2	–	1850	late Aug
Nicator	Mtai	1	–	350	late Jul
Yellow-streaked Greenbul	Mtai	1	–	850	early Aug
Fülleborn's Black Boubou	Ukagurus	2	–	1800	late Aug
				1850	early Sep
Moreau's Sunbird	Ukagurus	6	f	1800	late Aug
				1850	early Sep
Olive Sunbird	Mtai	1	f	850	early Aug
Red-faced Crimson-wing	Ukagurus	1	m	1800	late Aug

Conservation

Our work, and that of the other authors cited, demonstrates the importance of these Eastern Arc forests for the conservation of genetic diversity, which is quite out of proportion to their size. The value of Mwanihana Forest Reserve in the Uzungwas has recently led to its incorporation into a new National Park. Other Tanzanian Eastern Arc forests have at best Forest Reserve designation. Such sites were established as extractive reserves and/or for catchment protection, which sometimes conflicts with their importance for biological conservation.

Around half (1645 ha) of Mtai Forest is within a Forest Reserve. We saw little sign of agricultural encroachment. Mechanical logging is currently forbidden in the East Usambaras. Pitsaw logging, however, operates at a high level. We observed extensive damage to soil and neighbouring trees. There is a severe risk of the forest being degraded by disturbance, selective removal of emergent trees and fragmentation of the canopy. Secondary forest lacks the deeply shaded undergrowth which may be vital for, among others, Swynnerton's Forest Robin and the scarce amphibians of the Usambaras. (Hamilton & Bensted-Smith (1989) provide a full review of conservation in the East Usambaras.)

All of the Ukaguru forests are in Mamiwa Kisara Forest Reserve. Little encroachment reportedly occurs on the north side, but apparently it is severe in the south where the reserve boundary is not marked. Currently commercial logging is negligible

because of the area's remoteness, but a new road is proposed to allow exploitation of the neighbouring softwood plantations, and this might make logging economically viable in the future. The main problem is that the forest supplies most of the fire- and building-wood for around 10 000 surrounding households. Local forest officers recognize that this is unsustainable, and there are now plans to greatly expand the production of tree seedlings (S. Malisa, Nursery Officer, Mamiwa Kisara, verbally). With these, the reserve boundary can be demarcated and village woodlots established to relieve pressure on the forest. The Wildlife Conservation Society of Tanzania is funding this grass-roots conservation scheme.

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