

Records of birds from the forests of the East Usambara lowlands, Tanzania, August 1994–February 1995

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Following the completion of the Frontier-Tanzania Coastal Forest Survey Programme, the Society for Environmental Exploration and the Faculty of Science, University of Dar es Salaam have together embarked on a similar joint programme of surveys in the East Usambara lowlands, Tanga Region, northeast Tanzania. As part of this programme, bird surveys were carried out in the East Usambaras from August 1994 to February 1995 in five forest patches—Magrotto, Kisiwani, Manga, Longuza (north) and Kwangumi. Manga and Longuza (north) had not been visited by ornithologists before. Previous coverage below 400 m during the warm season, October–March, had been largely restricted to a single site, Kisiwani. This paper summarizes the new distributional data gathered, and observations of seldom-recorded species. New data on forest extent and conservation prospects are also given. Throughout this paper the species order and nomenclature follow Britton (1980) for the passerines and the *Birds of Africa* (Brown *et al.* 1982, Urban *et al.* 1986, Fry *et al.* 1988) for the non-passerines, with modifications recommended by Turner *et al.* (1991).

Study sites and coverage

The five study sites are shown in Fig. 1 and site characteristics and ornithological coverage are summarized in Table 1. Magrotto is a privately owned estate with adjoining patches of village forest. The other forest blocks are named after the Forest Reserves within which they lie, except for 'Kisiwani'. This site straddles Kihuhwi–Sigi Forest Reserve and the south part of Longuza Forest Reserve, each of which contains other forest patches. I have named it after the nearest village, for clarity and convenience.

I gathered the bulk of the ornithological data. In addition to diurnal and nocturnal observation at all sites, mist-netting was conducted at Manga (1970 net metre-hours) and 50 birds were caught and ringed. A great deal of survey effort was concentrated on investigating the population density of Sokoke Scops Owls *Otus ireneae* (see Evans in prep.).

Most of Magrotto Hill has been deforested, but small patches of moderately degraded forest remain as a broken ring on the slopes around the recently abandoned Amboni Oil Palm Estate, which occupies a wide basin at the top of the hill. This forest is more than 400 m higher than the other study sites in this paper. The hill is the main water catchment for the town of Muheza and many smaller villages. There is a proposal to establish the estate and surrounding forest as a protected area (probably a Forest Reserve) and to allow natural forest to regenerate in the estate, but at the time of writing funds were not available (A. Tye, *in litt.* 1995). The site is isolated by several kilometres of cultivated land from the nearest sizeable forest block.

Manga has been heavily logged and is under continuing pressure from illegal pitting operations. Small stands—a few hectares in size—of virtually unlogged

Table 1. *Study sites and completeness of bird inventory in forest habitat at each site*

Site	Magrotto	Kisiwani	Manga	Longuza (N)	Kwamgumi ¹
Location	38°46E 5°07S	38°41E 5°06S	38°46E 5°02S	38°42E 5°03S	38°44E 4°57S
Forest area (km ²) at:					
0–400 m	0	2	11	2	23
400–800 m	3	1	0	0	16.5
>800 m	0.5	0	0	0	3
Altitudinal range	580–900 m	200–530 m	130–340 m	130–360 m	130–1100 m
Altitude surveyed	580–900 m	200–490 m	130–340 m	130–250 m	130–400 m
Field dates ²	1/8–13/9/94	22/9–1/10/94 31/12/94–3/1/95	12/10–7/12/94	9–15/1/95	24/1–4/2/95
Diurnal coverage ³	Good throughout	Moderate all S of Sigi River	Good none E of Mruka River	Moderate N third of natural forest only	Moderate NW corner only
Nocturnal coverage ³ (h)	Good (50) throughout	Poor (5) only along road	Good (75) none E of Mruka River	Poor (10) N third of natural forest only	Moderate (38) NW corner only. No moonlit nights

¹ Site data include the contiguous Segoma and Bamba Ridge Forest Reserves, but almost all fieldwork was within Kwamgumi Forest Reserve.

² Include some days not spent on ornithological surveys.

³ Completeness of bird inventory, on a three-point scale, Good/Moderate/Poor.

forest remain in the south and west of the reserve. The Mruka River is a perennial stream 3–5 m wide which supports tall riverine forest on long stretches of both banks. Degraded forest remains in patches along the larger Sigi River, but a belt of open grassland within the reserve separates the main forest block from this river. Apart from these two rivers there are no permanent watercourses. This is probably one of the driest East Usambara forests, lying as it does several kilometres from the steep escarpments where much of the rainfall is generated.

Kwamgumi supports some of the tallest, least-disturbed lowland forest left in the East Usambaras. However, pitsawing has left degraded patches throughout the lower parts. Kwamgumi forms part of the largest lowland block in the Usambaras. The East Usambaras Catchment Forest Project, together with the Kambai Forest Conservation Project, are in the process of establishing a corridor of replanted forest linking this with

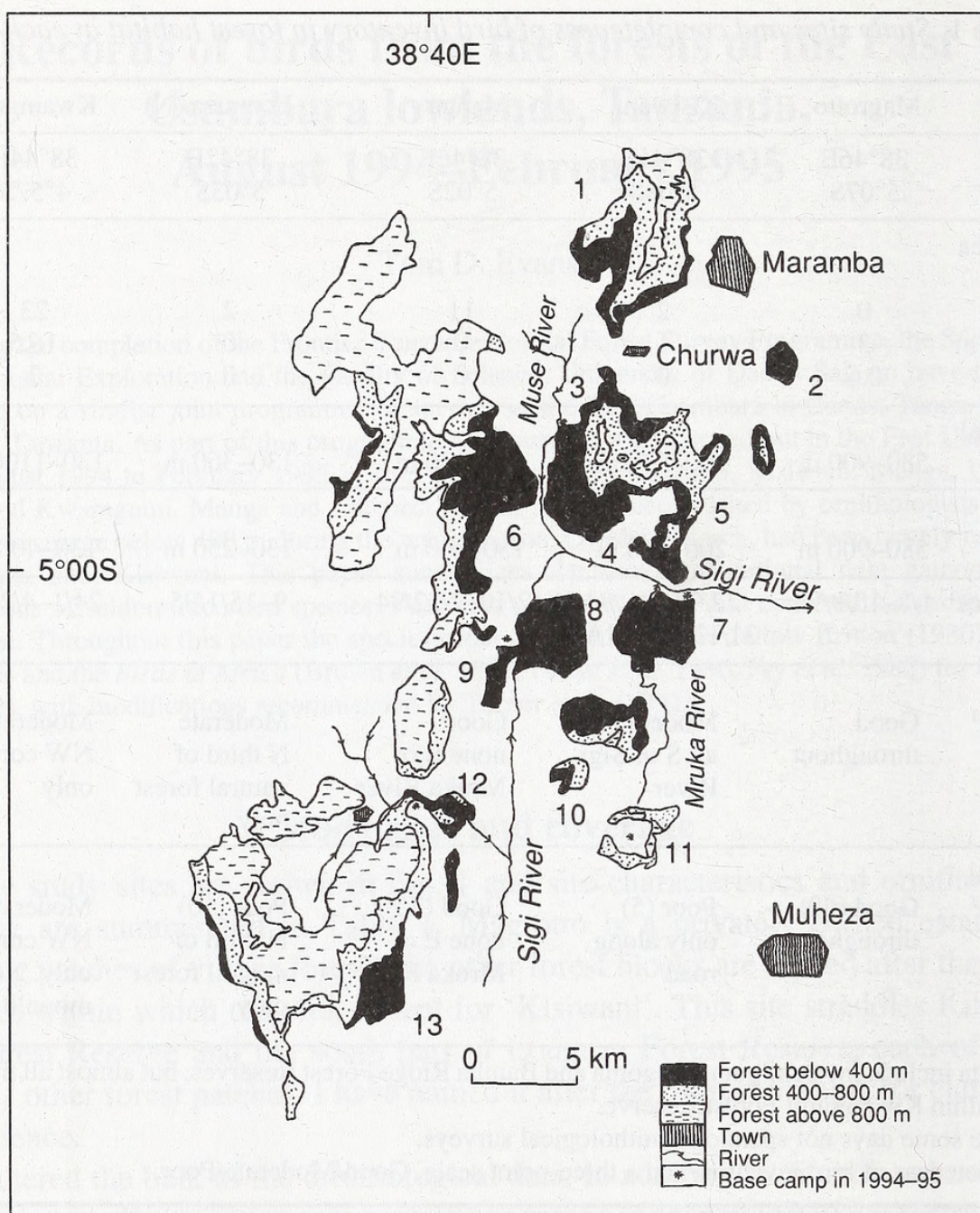


Figure 1. Forest areas in the East Usambaras and place names mentioned in the text

1 = Mtai, 2 = Mtapwa, 3 = Kwamgumi, 4 = Segoma, 5 = Bamba Ridge, 6 = Semdoe, 7 = Manga, 8 = Marimba, 9 = Longuza (north), 10 = Mgeza, 11 = Magrotto, 12 = Kisiwani, 13 = Kwamsambia

the proposed Semdoe Forest Reserve, which is the second largest block. There is also a wide connection with forests above 800 m.

Longuza (north) is small and has been heavily logged. It was planned to convert it to plantations of exotic species (as has already happened with most of the reserve) but policy changes in the 1960s resulted in the natural forest being reprieved before clear-cutting took place (S. Johansson, *in litt.* 1995). Local cultivation and exotic timber plantations border the forest on three sides. On the fourth side, grassland separates it from a belt of riverine forest along the Sigi River and from Marimba Forest Reserve on

the other bank, except for a tenuous forest link about 200 m in width at the northernmost end of the reserve.

The forest at Kisiwani occupies two hilltops and the very steep valley between them. The Sigi River flows through this valley along a series of rapids and waterfalls and there are over 2 km of riverine forest on each bank. The forest has been moderately degraded by pitsawing (which was still occurring at the time of the survey) and forest stature is further reduced by the steep gradients, extensive boulder piles and rocky outcrops. The site is isolated from other lowland areas by extensive cultivation or exotic plantations; the only habitat link with higher altitudes is along the banks of the Sigi River.

Lowland forest cover in the East Usambaras

Forest cover was estimated from Fig. 1, a modification of Fig. 3 in the Cambridge Tanzania Rainforest Project (1994). A recently completed inventory of the East Usambara forests (Hyytiäinen 1995) was not available before submission of this paper. It has been updated from its predecessor by deleting large areas of forest which, though marked on 1:50 000 topographic maps (published by the Ordnance Survey, UK for the Government of Tanzania), were not found during the 1994–1995 fieldwork (which included several long walks outside the sites where birds were surveyed, above). For submontane areas, Fig. 1 is based on AFIMP (1986). The map clearly shows the high degree of forest fragmentation. Damage from logging and other human activities is also very widespread. Scattered patches of degraded forest up to a few hectares in size remain in many areas, often on hilltops, but are not shown in Fig. 1.

For ornithological purposes, lowland areas are those below 800 m, following Moreau (1935) and Stuart (1983). In Fig. 1, this is divided into areas below and above 400 m. The area below 400 m is roughly the extent of habitat for three key bird species: Sokoke Scops Owl *Otus ireneae*, East Coast Akalat *Sheppardia gunningi* and Swynnerton's Robin *Swynnertonia swynnertoni*, though all are absent from some parts of this altitudinal belt, and may extend a little higher in places. According to Fig. 1, there are 187 km² of lowland forest in the East Usambaras, 97 km² of it below 400 m.

Records of threatened and near-threatened species

The following species were listed by Collar *et al.* (1994). Records are summarized in Table 2. Categories of threat taken from Collar *et al.* (1994) are given immediately after the scientific name. According to that study, a threatened, vulnerable species "faces a high risk of global extinction in the medium-term future". Near-threatened species are not currently thought to be threatened with extinction, but may become so, and require special monitoring.

Southern Banded Snake Eagle *Circaetus fasciolatus* Near-threatened. This species was detected (mainly by call) on most field days at all sites. Individuals were often seen on relict standing trees in Magrotto oil palm plantation and also observed hunting in Kwamtili cocoa plantation, on the northern edge of Kwamgumi, sometimes more than 1 km from natural forest at both sites.

Fischer's Tauraco *Turaco fischeri* Near-threatened. These birds were common, being heard at least daily and often seen, at all sites visited.

Sokoke Scops Owl *Otus ireneae* Threatened: Vulnerable. This species was recorded from Kwamgumi, Manga and Longuza (north). The last two are new localities. It is almost certainly absent from Magrotto and probably absent from Kisiwani (where too little time was spent searching at night to be sure). The species was first found in the East Usambaras in 1992 (Evans *et al.* 1994) and before that, was known only from the Arabuko-Sokoke forest in Kenya. Most records to date have been from gently sloping forest up to 350 m. A record from Kwamgumi at c. 400 m in February 1995 is the highest to date. At this altitude, the slopes were very steep (enough to make walking without holding on to trees difficult) and exposed rock was common.

Detailed notes on habitat use, behaviour and a pilot survey of population density can be found in Evans (in prep.). These preliminary estimates of density (by a hybrid line-transect/mapping method) suggested a density of 3–4 territories km⁻² in Kwamgumi and <1.5 territories km⁻² in Manga. The difference between these two forests, which is thought to be real, may be due to the heavily degraded nature of Manga. The densities are markedly lower than the 6–9 territories km⁻² recorded in Arabuko-Sokoke (Britton & Zimmermann 1979, Kelsey & Langton 1984, Virani in prep.). Though calculation of the total number of territories in the East Usambaras is not possible, these sample areas suggest a number in the low hundreds. There are thought to be just over 900 territories in Arabuko-Sokoke (Virani in prep.).

Usambara Eagle Owl *Bubo vosseleri* Threatened: Vulnerable. None was recorded by the author despite nearly 200 h of nocturnal work spread over six months. However, individuals were heard in Kwamgumi at 950 m in mid-February 1995 and at 200 to 300 m in both Kwamgumi and Segoma in early March 1995 (S. Cox, verbally, 1995). The latter are the first lowland records in the October to March period, when most altitudinal migrants have returned to higher altitudes to breed (Stuart 1989). Together with records in Evans *et al.* (1994) they suggest that this species is resident in the lowlands (*contra* speculation in Collar *et al.* 1994).

East Coast Akalat *Sheppardia gunningi* Threatened: Vulnerable. This species was commonly heard in Manga and Longuza (north) and occasionally heard in Kwamgumi, but not recorded in Magrotto (which was presumably too high) or, oddly, Kisiwani. Stuart (1983) also failed to find the species at Kisiwani. The species clearly tolerates quite severe degradation of habitat, since as many as 5–10 could be heard along 1–2-km stretches of trail in Manga and Longuza (north) where tall evergreen thicket and small trees (canopy height 6–12 m) predominated, representing regeneration after heavy logging. However, recently logged areas with extensive thickets of *Olyra latifolia* and a less shady understorey were apparently avoided. The highest altitude recorded for the East Usambaras is at around 300 m in Manga.

Swynnerton's Robin *Swynnertonia swynnertoni* Threatened: Vulnerable. In Manga, only five singing birds were found, in the tallest remaining forest stands visited. Others

can be expected to occur in additional remnant stands along the course of the Mruka River, but the total population is probably small. The species was absent from the degraded forest of Longuza (north), but during fieldwork there two were heard singing on the opposite bank of the Sigi River, in the taller forest of Marimba Forest Reserve. A few were also heard singing in areas of tall, well-structured forest in Kwamgumi, though fewer than in August 1992, possibly due to seasonal differences in output. This species appears markedly less tolerant of logging than is the East Coast Akalat. The Manga population is probably in danger of extinction if the current illegal logging of remnant stands of tall forest is allowed to continue. It was not found in Magrotto or Kisiwani. A female was observed in Kwamgumi in moderately tall forest on fairly steep slopes near a rocky outcrop at c. 450 m on 1 February 1994. This is the second highest record for the East Usambaras, the highest being the first record, at 550 m in Mtai in 1990 (Evans & Anderson 1993). Two were seen with a juvenile not long out of the nest in Kwamgumi in late February 1995 (S. Cox, verbally, 1995).

Table 2. All known records of threatened and near-threatened species from the study sites

Pre-1994 records in parentheses					
Species	Magrotto	Kisiwani	Manga	Longuza (north)	Kwamgumi
Threatened					
Sokoke Scops Owl			+	+	+
Usambara Eagle Owl					+
Swynnerton's Robin			+		+
East Coast Akalat			+	+	+
Amani Sunbird	+	(+)	+		+
Banded Green Sunbird	+	+			
Near-threatened					
Southern Banded Snake Eagle	+	+	+	+	+
Fischer's Turaco	+	+	+	+	+
Plain-backed Sunbird		+	+	+	+

Amani Sunbird *Anthreptes pallidigaster* Threatened: Vulnerable. The only sightings were of a female carrying nest material at 600 m in Magrotto on 11 September 1994 and a pair on the forest edge in Manga at 200 m on 5 December 1994.

Plain-backed Sunbird *Anthreptes reichenowi* Near-threatened. This species was abundant at Manga, Kwamgumi, Kisiwani and Longuza (north) but absent from Magrotto. It occurs at high densities even in degraded forest. Nest-building was observed on 4 November in Manga at 150 m. The nest was a pouch, attached along about 5 cm of the side branch of a liana (rather than hanging by a point or loop). It hung about 5 m up in a void several metres across in an area of low, degraded forest. It appeared to be formed of dead leaf fragments, silk and many horsehair-like black threads, presumably the fungal mycelia described by Moreau (1935).

Banded Green Sunbird *Anthreptes rubritorques* Vulnerable. Singles and twos were seen on five occasions at about 800 m in Magrotto in August and September. A pair was watched nest-building in Kisiwani forest at 300 m from 28 September to at least 1 October 1994. This is the first breeding record below about 800 m, above which altitude they breed widely (Stuart 1983, 1989). They may breed throughout the 300–800 m altitudinal belt on the escarpments of the mountains. The nest was being built about 15 m up in the crown of a leafless tree standing over the main Amani–Muheza road, deep in the forest. The structure of the nest was not clearly visible as it nestled amongst the dense twiggy growths that smothered the tree's upper branches. The male stood sentry in a neighbouring leafless tree, calling frequently, while the female shuttled back and forth collecting and adding nest material, including silk from spider webs. Moreau & Moreau (1937) describe similar behaviour by a pair they watched.

Other significant ornithological records

In contrast to the fieldwork in 1992 (Evans *et al.* 1994), the 1994/95 fieldwork added no new forest birds to the East Usambara list. The following records are of interest because they are of seldom-reported species or because they provide new information on the status of species within the East Usambaras. Full species lists are given in the Appendix.

Booted Eagle *Hieraaetus pennatus* One was seen on 13 October 1994 at Manga, flying south.

Ayres' Hawk Eagle *Hieraaetus ayresii* Singles were seen over forest on 4 August 1994 at Magrotto (600 m) and 2 November 1994 at Manga (150 m).

Crested Guineafowl *Guttera pucherani* There were hunters' reports from Magrotto and feathers were found twice in Kwangumi but there were no records from Kisiwani or Longuza (north). At all four of these sites densities thus appeared low. By contrast, throughout Manga the density was apparently high, since many groups of 2–5 were seen, several dust baths with shed feathers were found and calls were heard on most days and frequently by night.

Buff-spotted Flufftail *Sarothura elegans* The call was heard on the night of 4 September 1994, in foggy conditions with intermittent drizzle. The bird was at 600 m in Magrotto in an area of forest with a sparse canopy and a very thick understorey of *Costus* sp. and abandoned cardamom *Elettaria cardamomum*.

Finfoot *Podica senegalensis* There were several sightings of 1–2 individuals along the Sigi River adjoining Manga in October–December 1994.

Barred Long-tailed Cuckoo *Cercococcyx montanus* Singles were heard in Manga (150 m) on 16 and 17 October 1994 and in Kwangumi (150 m) on 30 January 1995. There are no other published lowland records for the October–March period in the East Usambaras, when the entire population was believed to move to higher elevations to

breed (Stuart 1989). A small proportion apparently remains in the lowlands.

Yellowbill *Ceuthmochares aereus* Yellowbills were seen and heard daily at all sites except Magrotto. Remarkably, there was no record from Magrotto, despite extensive apparently suitable habitat.

Spotted Eagle Owl *Bubo africanus* One with a damaged right eye repeatedly came to catch moths at a mercury-vapour bulb set at the estate manager's house on the forest edge, Magrotto, in August and September 1994. Another was flushed by day on 27 September 1994 about 200 m inside Kisiwani forest. In view of their close relationship, similarity in size and the potential for co-occurrence in the increasingly degraded and fragmented East Usambara forests, it is conceivable that this species may compete with the Usambara Eagle Owl.

Verreaux's Eagle Owl *Bubo lacteus* One was seen by day being mobbed by passerines on the forest edge in the proposed Semdoe Forest Reserve in August 1994 (A. Perkin and A. Hipkiss, verbally, 1994). This species may also be a potential competitor with the Usambara Eagle Owl.

Barred Owlet *Glaucidium capense* On the moonlit night of 14 January 1995, at least eight were heard in degraded forest in Longuza (north), c. 200 m. Some responded to a tape of the species from Chappuis (1978), others were calling spontaneously. One was in the same grove of trees as a calling Sokoke Scops Owl. There is only one previous East Usambara record, from Kwamgumi in 1992 (Cambridge Tanzania Rainforest Project 1994).

Fiery-necked Nightjar *Caprimulgus pectoralis* This species was only recorded at Manga. Calls, often attributable to more than one individual, were heard by night from birds overflying the forest and nearby scrubby areas. Calls were heard regularly in the period 12–21 October 1994, during clear, brightly-moonlit nights. None was heard thereafter, despite a great amount of nocturnal ornithological coverage.

Bar-tailed Trogon *Apaloderma vittatum* One was recorded in Magrotto at 750 m in August 1994. There was also one lowland record, of a male in a mixed-species flock at 200 m in Manga on 4 November 1994. This is the first lowland record for the October–March period in the East Usambaras (see Stuart 1989).

Half-collared Kingfisher *Alcedo semitorquata* This species was recorded regularly from Manga (Sigi River, Mruka River and a seasonal pool at the forest edge), from Longuza (north end, along the Sigi River bordering Marimba Forest Reserve) and from Kwamgumi (along the Muse River). All sites were well wooded, but not necessarily in closed forest. There are no other published lowland records from the East Usambaras, although there is one specimen in the collection of the British Museum (Natural History) from the lowlands near Marimba (pers. obs.).

Silvery-cheeked Hornbill *Ceratogymna brevis* There was only one record from Magrotto, in August, in contrast to Trumpeter Hornbills *C. bucinator*, which were seen

daily in flocks of 50–100. There were records from Kisiwani forest in both study periods, but only of overflying birds. There were no records from Manga. By contrast, in Kwamgumi, just a few kilometres away from Manga at the same altitude, several feeding parties were encountered daily. They were also seen flying to and from Marimba Forest Reserve in January 1995. Stuart (1989) only recorded them down to 450 m, but in view of the records above and those of the Cambridge Tanzania Rainforest Project (1994), they are clearly regular visitors during both warm and cold seasons in several forests as low as 150 m.

Eastern Green-backed Honeybird *Prodotiscus zambesiae* Singles were seen in Magrotto at 700 m on 8 September 1994 and Kisiwani forest at 400 m on 1 January 1995. Good views were obtained at around eye-level and the birds were readily identified by the combination of the fine bill, bright green wings and mantle, dull grey head, nape and breast and whitish lower belly, with gradual transition between these tracts of colour.

Pallid Honeyguide *Indicator meliphilus* Singles were seen in Manga at 150 m on 19 November 1994 and Kisiwani at 350 m on 2 January 1995. They were distinguished from adult the Lesser Honeyguide *I. minor* by their small size, lack of malar stripe and green head, and from juvenile Lesser Honeyguide by their small size.

Mombasa Woodpecker *Campethera mombassica* This species was uncommon (with records on less than half the field days) in Manga and Kwamgumi. It was not seen, but seems likely to occur, in Longuza (north) and Kisiwani forests. The only one seen in Magrotto was not separable from the Golden-tailed Woodpecker *C. abingoni* on the views obtained. There are as yet no confirmed records of *C. (abingoni) abingoni* from the East Usambaras. An occupied nest-hole was found in Manga in late November 1994, in the underside of a dead branch (c. 10-cm diameter) 3 m up in a tree on the forest edge.

Little Greenbul *Andropadus virens* This very vocal species is usually considered ubiquitous in the East Usambara forests (e.g., Stuart 1989). However, in Manga in October–December 1994, it was apparently absent from the vast majority of the reserve, including quite tall forest in the south and north-east. A few were heard along the banks of the Mruka River in lush but quite degraded forest growth. In Longuza (north) the species was common in habitat apparently similar to most of Manga. It was possibly overlooked in Manga due to a seasonal lull in calling, but calling activity was high at Kisiwani immediately before the Manga survey period, at Amani during and immediately after, and at Jozani forest, Zanzibar, very soon after (pers. obs.), so this seems somewhat unlikely.

Yellow-bellied Greenbul *Chlorocichla flaviventris* Commonly found in degraded areas of Manga Forest Reserve. Also present in Kwamgumi (one record from degraded forest beside the Muse River) and Longuza (north). In 1992/93 the only records came from Mtapwa (Cambridge Tanzania Rainforest Project 1994).

Yellow-streaked Greenbul *Phyllastrephus flavostriatus* Like Little Greenbul, this vocal species was unaccountably scarce in Manga in October–December 1994 but common at all other study sites. In addition to sites along the Mruka River, it was present in the tall forest in the south of Manga and there were two records from elsewhere in the reserve, but the abundance, or at least the conspicuousness of the bird was very low over most of the reserve.

Northern or Terrestrial Brownbul *Phyllastrephus strepitans* or *terrestris* Unidentified birds of this species pair were common in degraded forest in Manga, with single records from Kwamgumi and Kisiwani. Previous workers report only *terrestris* from the East Usambaras (e.g., Moreau 1935, Stuart 1989), though *strepitans* is known from Tanga to the east (Sclater & Moreau 1932–33) and Mafi Mount south of the West Usambaras, whence there are specimens in the British Museum (Natural History) (pers. obs.).

Eastern Bearded Scrub Robin *Cercotrichas quadrivirgata* This elusive species was seen several times in Manga below 300 m in October–December and may have been under-recorded as the call was known, but not the song. A very recently-fledged bird was found in Manga on 1 December 1994. In 1992/93, the only record came from Mtapwa (Cambridge Tanzania Rainforest Project 1994).

Orange Ground Thrush *Zoothera gurneyi* One was seen in Magrotto at 600 m on 14 August 1994, in the dense undergrowth near a stream in an oil palm plantation, and another in forest there at 600 m on 31 August 1994.

Grey-backed Camaroptera *Camaroptera brachyura* A high proportion of individuals could not be assigned to either form of this species due to their skulking habits. All but two of the birds that could be assigned were Grey-backed *Camaroptera (brachyura) brachyura*. This was recorded at all sites except Kwamgumi (where it was recorded in 1992 (Cambridge Tanzania Rainforest Project 1994)). One well seen at 600 m on Magrotto in August 1994 and another at 400 m at Kisiwani in September 1994 were Green-backed *C. (brachyura) brevicaudata*, the green mantle colour contrasting obviously with the grey nape but not the green wing coverts. Both were at least 50 m within degraded forest 15–20 m tall. Thus the two forms appear to co-exist in the East Usambaras. The two have been regarded as separate species by, for instance, Sibley & Monroe (1990).

Southern Hyliota *Hyliota australis* This species was seen daily at Kisiwani where 5–10 (perhaps more) were present as scattered ones and twos along the 2 km of road through the forest, which provided ideal canopy-viewing conditions. One was seen in Manga. They were usually seen in mixed-species flocks with other small passerines. They foraged mainly in the highest tree crowns (above 15–20 m), often those bare of leaves, keeping to the twigs and smaller branches. They seldom called, and no diagnostic call was noted.

The species can be difficult to see from paths under the forest canopy, but nonetheless, the small number of records over the past five years (see Cambridge

Tanzania Rainforest Project (1994) for other records) suggests a small, patchy population. The only published records above 400 m are of the type specimens, which were taken at 900 m [3000 feet] (Sclater 1932).

The possibility has been raised (C.H. Fry, *in litt.* to A. Tye 1994) that the race *H. a. usambarae* deserves specific rank because the female is thought to have black dorsal plumage identical with the male. This is true for the only known female specimen of *usambarae*, which is in the British Museum (Natural History). In all other races the male is black above, the female dark brown (Mackworth-Praed & Grant 1960, 1963, 1973). If treated as a species, it would merit great conservation concern because of its small range and apparently low numbers. The split has not been proposed with complete confidence as it is conceivable that the crucial specimen has been wrongly sexed. It was hoped to confirm the theory by observing the species in the wild.

It was difficult to judge the precise colour of many of those seen in 1994–95 as they seldom descended as low as 20 m from the ground and were thus typically seen from below, against a bright sky. It was also impossible to be sure that two associating together were male and female. Nonetheless, I have yet to see a bird believed to be brown above, and I have seen at least ten, often moving in twos, which I was confident were black. I suspect that the female's plumage will indeed prove to be similar to the male's. It would be worthwhile to invest effort in canopy mist-netting at Kisiwani in an attempt to fully resolve this question.

Kretschmer's Longbill *Macrosphenus kretschmeri* This species was common, often several individuals being heard each day, at Kisiwani, Longuza (north), Manga and Kwamgumi. It was presumably overlooked at this third site in 1992 (Cambridge Tanzania Rainforest Project 1994). It was less commonly heard at Magrotto. Vine-smothered standing trees in logged areas and the forest edge were the preferred habitat.

Black-throated Wattle-Eye *Platysteira peltata* Females were seen in riverine forest beside the Sigi River (140 m) in Longuza Forest (north) on 11 January 1995 and in riverine forest beside the Muse River (140 m) just north of Kwamgumi on 4 February 1995. These appear to be the first published East Usambara records since Sclater & Moreau (1932–33).

Waller's Chestnut-wing Starling *Onychognathus walleri* This vocal species was common at Magrotto. It was also common at two of the lowland sites, Kisiwani (both study periods) and Kwamgumi where it was present below 200 m. However, it was not found in Manga or Longuza (north). Stuart (1989) states that it occurs throughout the East Usambara forests but it may prove to be at least seasonally absent from some.

Yellow White-eye *Zosterops senegalensis* Occasional small parties were seen as low as 600 m in Magrotto. Stuart (1989) lists them as occurring only as low as 800 m in the East Usambaras.

Red-headed Bluebill *Spermophaga ruficapilla* Singles were seen in Magrotto, Manga, Kisiwani (twice), Longuza (north) and Kwamgumi. They were often detected by their loud call, a sharp *pik* note. The Longuza bird was in a sprawling thicket of

shrubs and lianas no more than 6 m tall, with grassy lawns, close to a taller stand of forest trees. The Manga bird was in an area with less than 50 per cent tree canopy cover (due to logging) and a tall, dense shrub layer. These two records indicate some tolerance of degraded forest. The Longuza sighting, on 14 January 1995, was of a male singing while hopping around energetically inside the thicket. The song was a jumble of twitters and weak chirps, mostly quite high and stuttery, varying suddenly in speed, rushing then slowing. A male was seen on 31 September 1994 in Kisiwani carrying a bundle of wood fibres, presumably for lining a nest.

Conservation Measures

This is not the place to reiterate the great range of conservation recommendations that have been made for the East Usambaras (see, e.g., Stuart 1983, Hamilton & Bensted-Smith 1989, Cambridge-Tanzania Rainforest Project 1994, Anon 1994, EUCFP 1995). A few points of current interest are, however, listed here.

1. Most of the remaining lowland forest has been incorporated into the Forest Reserve system, or incorporation is under way, thanks to the energetic efforts of the East Usambara Catchment Forest Project. However, the Catchment Forest Office remains dependent on continuing external financial support to maintain adequate policing levels. The long-term future of these sites is far from assured.
2. Attempts to upgrade legal protection for a large area to be known as the 'Amani Nature Reserve' are progressing slowly (EUCFP 1995), although levels of disturbance have already been reduced (S. Johansson, *in litt.* 1995). The nature reserve will incorporate a limited area of lowland forest, at Kwamsambia, in addition to large areas of prime submontane forest. If an adequate sample of lowland forest were to benefit from such a scheme, a second reserve would be required, centred on the Kwamgumi–Segoma–Semdoe area. This is unlikely to be possible until the Amani Nature Reserve is successfully established.
3. A sizeable area of the western part of Manga forest block, including some tall forest along the Mruka River, still lies outside current Forest Reserve boundaries and should be incorporated as soon as possible. The process of gazetting is under way (S. Johansson, *in litt.* 1995).
4. Unprotected forest adjoins the eastern part of Marimba Forest Reserve and deserves incorporation in that reserve.
5. Two other significant patches of evergreen forest remain unprotected—Mtapwa and Mgeza (see Fig. 1). The possibility of protecting these should be explored soon, especially for Mtapwa which was being severely degraded for charcoal production in 1992 (pers. obs.).
6. Riverine forest is important because it is often particularly tall and rich, supports some species of wildlife, including birds such as White-backed Night Heron *Gorsachius leuconotus*, African Finfoot and Half-collared Kingfisher, which are not found in neighbouring areas of drier forest, and allows access to water for shy

- forest mammals and birds. It is vulnerable because of its relatively small extent and the value of alluvial riverside sites for agriculture. Special attention should be given to this habitat where it occurs along the Mruka, Muse and Sigi rivers. Where these rivers form reserve boundaries, a belt (perhaps 50 m wide) along the unprotected bank could be considered for protection and regeneration of natural forest.
7. It would be valuable to encourage natural forest to regenerate on the grasslands in the north of Manga Forest Reserve and perhaps in the north part of Longuza Forest Reserve as well.
 8. Pitsawing seemed to be occurring at a high level in Magrotto and Manga and at a moderate level in Kisiwani. Further action is needed at these sites, particularly Manga where few mature stands remain. The East Usambara Catchment Forest Project is giving a high priority to addressing this problem (S. Johansson, *in litt.* 1995).
 9. Pitsawing pressure in Kwamgumi was clearly much less in 1995 than 1992 (pers. obs.). This is a good development, likely due in part to improved law enforcement.

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Appendix: Systematic list of species recorded in forest at the study sites

Confirmed presence (+) is shown. The columns represent:

Mn	Manga October–December 1994	Kj	Kisiwani January 1995
Kw	Kwamgumi January–February 1994	Ks	Kisiwani September 1994
L	Longuza (north) January 1994	Mo	Magrotto 600–800 m August–September 1994

Species (1)	Mn	Kw	L	Ks	Kj	Mo
Palm-nut Vulture <i>Gypohierax angolensis</i>	+	+	+	+	+	+
Southern Banded Snake-Eagle <i>Circaetus fasciolatus</i>	+	+	+	+	+	+
African Harrier-Hawk <i>Polyboroides typus</i>	+	+	+	+		+
African Goshawk <i>Accipiter tachiro</i>	+			+	+	+
African Little Sparrowhawk <i>Accipiter minullus</i>	+					
Black Sparrowhawk <i>Accipiter melanoleucus</i>	(2)					
Ayres' Hawk Eagle <i>Hieraaetus ayresii</i>	+					+
Crowned Eagle <i>Stephanoaetus coronatus</i>	+	+	+	+	+	+
Crested Guineafowl <i>Guttera pucherani</i>	+	+				
Buff-spotted Flufftail <i>Sarothrura elegans</i>		+				+
African Finfoot <i>Podica senegalensis</i>	+					
African Green-Pigeon <i>Treron calva</i>	+					+
Tambourine Dove <i>Turtur tympanistria</i>	+	+	+	+	+	+
Eastern Bronze-naped Pigeon <i>Columba delegorguei</i>	+	+	+	+	+	+
Red-eyed Dove <i>Streptopelia semitorquata</i>	+	+	+			+
Fischer's Turaco <i>Tauraco fischeri</i>	+	+	+	+	+	+
Barred Long-tailed Cuckoo <i>Cercococcyx montanus</i>	+	+				
Emerald Cuckoo <i>Chrysococcyx cupreus</i>			+			
Klaas's Cuckoo <i>Chrysococcyx klaas</i>	+		+	+	+	+
Yellowbill <i>Ceuthmochares aureus</i>	+	+	+	+	+	(3)
White-browed Coucal <i>Centropus superciliosus</i>	+					
Sokoke Scops Owl <i>Otus ireneae</i>	+	+	+			
Spotted Eagle Owl <i>Bubo africanus</i>				+		(2)
Usambara Eagle Owl <i>Bubo vosseleri</i>		+				
African Barred Owlet <i>Glaucidium capense</i>			+			
African Wood Owl <i>Strix woodfordii</i>	+	+	+			+
Mottle-throated Spinetail <i>Telacanthura ussheri</i>	+	+	+	+	+	+
Böhm's Spinetail <i>Neafrapus boehmi</i>	+		+	+		
Bar-tailed Trogon <i>Apaloderma vittatum</i>	+					+
Narina's Trogon <i>Apaloderma narina</i>	+	+	+	+	+	+
Brown-hooded Kingfisher <i>Halcyon albiventris</i>	+	+	+	+	+	+
African Pygmy Kingfisher <i>Ispidina picta</i>						+
Half-collared Kingfisher <i>Alcedo semitorquata</i>	+		+			
Green Wood-hoopoe <i>Phoeniculus purpureus</i>	+	+	+	+	+	(2)
Crowned Hornbill <i>Tockus alboterminatus</i>	+	+	+	+	+	(2)
Trumpeter Hornbill <i>Ceratogymna bucinator</i>	+	+	+	+	+	+
Silvery-cheeked Hornbill <i>Ceratogymna brevis</i> (4)		+				+
White-eared Barbet <i>Stactolaema leucotis</i>	+	+	+	+	+	+
Green Barbet <i>Stactolaema olivaceus</i>	+	+	+	+	+	+
Green Tinkerbird <i>Pogoniulus simplex</i>	+			(5)	(5)	

Species (1)	Mn	Kw	L	Ks	Kj	Mo
Moustached Green Tinkerbird <i>Pogoniulus leucomystax</i>						+(6)
Eastern Green-backed Honeybird <i>Prodotiscus zambesiae</i>					+	+
Scaly-throated Honeyguide <i>Indicator variegatus</i>	+	+	+	+	+	+
Greater Honeyguide <i>Indicator indicator</i>	+		+			
Lesser Honeyguide <i>Indicator minor</i>	+					
Pallid Honeyguide <i>Indicator meliphilus</i>	+				+	
Mombasa Woodpecker <i>Campethera mombassica</i>	+	+				(7)
Little Spotted Woodpecker <i>Campethera cailliautii</i>	+	+	+	+	+	+
Cardinal Woodpecker <i>Dendropicos fuscescens</i>	+	+	+	+	+	+
African Broadbill <i>Smithornis capensis</i>	+	+	+	+		+
Drongo <i>Dicrurus adsimilis</i>	+					
Square-tailed Drongo <i>Dicrurus ludwigii</i>	+	+	+	+	+	+
African Golden Oriole <i>Oriolus auratus</i>	+					+
Green-headed Oriole <i>Oriolus chlorocephalus</i>	+	+	+	+	+	+
Pale-breasted Illadopsis <i>Trichastoma rufipennis</i>	+	+	+	+	+	+
Black Cuckoo Shrike <i>Campephaga flava</i>	+			+		+
Grey Cuckoo Shrike <i>Campephaga caesia</i>		+	+	+	+	+
Stripe-cheeked Greenbul <i>Andropadus milanensis</i>						+
Little Greenbul <i>Andropadus virens</i>	+	+	+	+	+	+
Yellow-bellied Greenbul <i>Chlorocichla flaviventris</i>	+	+				
Nicator <i>Nicator chloris</i>	+	+	+	+	+	+
Tiny Greenbul <i>Phyllastrephus debilis</i>	+	+	+	+	+	
Fischer's Greenbul <i>Phyllastrephus fischeri</i>	+			+		
Yellow-streaked Greenbul <i>Phyllastrephus flavostriatus</i>	+	+	+	+	+	+
Terrestrial Brownbul <i>Phyllastrephus terrestris</i>	(8)		(8)	(8)		
Common Bulbul <i>Pycnonotus barbatus</i>	+			+	+	+
Eastern Bearded Scrub-Robin <i>Cercotrichas quadrivirgata</i>	+					
Red-capped Robin-Chat <i>Cossypha natalensis</i>	+	+	+	+	+	+
Red-tailed Ant-Thrush <i>Neocossyphus rufus</i>	+	+	+	+	+	+
East Coast Akalat <i>Sheppardia gunningi</i>	+	+	+			
Swynnerton's Forest-Robin <i>Swynnertonia swynnertoni</i> (4)	+	+				
Orange Ground Thrush <i>Turdus gurneyi</i>						+
Yellow-throated Apalis <i>Apalis flava</i>	+					
Black-headed Apalis <i>Apalis melanocephala</i>	+	+	+	+	+	+
Grey-backed Camaroptera <i>Camaroptera brachyura</i> ssp.	+		+	+	+	++
Green-backed Camaroptera <i>Camaroptera brachyura</i> ssp. (9)	+		+	+		
Southern Hyliota <i>Hyliota australis</i>	+			+	+	
Kretschmer's Longbill <i>Macrosphenus kretschmeri</i>	+	+	+	+	+	+
Ashy Flycatcher <i>Muscicapa caerulea</i>	+			+		
Lead-coloured Flycatcher <i>Myioparus plumbeus</i>	+	+	+	+	+	
Forest Batis <i>Batis mixta</i>	+	+	+	+	+	+
Black-and-White Flycatcher <i>Bias musicus</i>	+	+	+	+	+	
Black-throated Wattle-eye <i>Platysteira peltata</i>		+	+			
Little Yellow Flycatcher <i>Erythrocerus holochlorus</i>	+	+	+	+	+	
Paradise Flycatcher <i>Terpsiphone viridis</i>	+	+	+	+		+
Crested Flycatcher <i>Trochocercus cyanomelas</i>	+	+	+	+	+	+
Mountain Wagtail <i>Motacilla clara</i>			+	+		+
Tropical Boubou <i>Laniarius ferrugineus</i>	+	+		+	+	+
Black-backed Puffback <i>Dryoscopus cubla</i>	+	+	+	+	+	+
Black-fronted (Many-coloured) Bush Shrike <i>Malaconotus (multicolor) nigrifrons</i>				+		+
Retz's Helmet-shrike <i>Prionops retzii</i>	+	+				

Species (1)	Mn	Kw	L	Ks	Kj	Mo
Chestnut-fronted Helmet-shrike <i>Prionops scopifrons</i>	+	+	+	+	+	
Black-breasted Glossy Starling <i>Lamprotornis corruscus</i>	+	+	+	+	+	+
Waller's Chestnut-wing Starling <i>Onychognathus walleri</i>		+		+	+	+
Red-wing Starling <i>Onychognathus morio</i>						+
Kenrick's Starling <i>Poeoptera kenricki</i>						+
Collared Sunbird <i>Anthreptes collaris</i>	+	+	+	+	+	+
Uluguru Violet-backed Sunbird <i>Anthreptes neglectus</i>	+	+	+	+	+	+
Amani Sunbird <i>Anthreptes pallidigaster</i>	+					+
Plain-backed Sunbird <i>Anthreptes reichenowi</i>	+	+	+	+	+	
Banded Green Sunbird <i>Anthreptes rubritorques</i>				+		+
Olive Sunbird <i>Nectarinia olivacea</i>	+	+	+	+	+	+
Yellow White-Eye <i>Zosterops senegalensis</i>						+(6)
Grosbeak Weaver <i>Amblyospiza albifrons</i>	+		+			
Dark-backed Weaver <i>Ploceus bicolor</i>	+	+	+	+	+	+
Peters' Twinspot <i>Hypargos niveoguttatus</i>	+	+	+	+	+	
Green-backed Twinspot <i>Mandingoa nitidula</i>	+			+		+
Red-headed Bluebill <i>Spermophaga ruficapilla</i>	+	+	+	+		+

Notes

- (1) The following species occurred transiently in or over forest but were not thought to be regular users: Augur Buzzard *Buteo augur*, Honey Buzzard *Pernis apivorus*, Fiery-necked Nightjar *Caprimulgus pectoralis*, Little Swift *Apus affinis*, African Palm Swift *Cypsiurus parvus*, Speckled Mousebird *Colius striatus* and Striped Swallow *Hirundo abyssinica*.
- (2) Forest edge, rather than within forest.
- (3) The lack of records from Magrotto in August–September 1994 probably represented genuine absence.
- (4) Also recorded in Marimba in January 1995.
- (5) Tinkerbirds were heard but not seen at these sites. They are expected to be *P. simplex*.
- (6) Recorded down to 600 m at Magrotto.
- (7) Birds at this site were not distinguished from *C. abingoni*.
- (8) Records could not be assigned between *terrestris* and *strepitans*.
- (9) The *Camaroptera* species are split by some recent authors (e.g., Sibley & Monroe 1990).



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