

Survey of birds on Namuli Mountain (Mozambique), November 2007, with notes on vegetation and mammals

Françoise Dowsett-Lemaire

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Summary

Ornithological surveys were carried out on Namuli Mountain (peak 2419 m) from 14-27 November 2007. Most forest on Namuli is found above 1600 or 1700 m, to c. 1900 m (with scrubby forest to 2000 m or a little higher), with the largest block of Manho Forest (at least 1000 ha) spreading over the south-western slopes of the Muretha Plateau. Mid-altitude forest on the south-eastern slopes has been greatly reduced in recent decades by fires and clearance for agriculture. Other habitats include montane grassland (rather wet and peaty), small areas of montane shrubland, rocky outcrops and large granitic domes. The woody vegetation of the various forest types is described in some detail: the dominant emergents of Afromontane forest at 1600-1850 m are *Faurea wentzeliana* (new for Mozambique, at its southern limit of range) and *Cryptocarya liebertiana*, followed by *Olea capensis*. *Albizia adianthifolia*, *Newtonia buchananii* and *Parinari excelsa* are dominant in mid-altitude forest (1200-1450 m). Some notes on mammals observed are also included.

The main base camp (15-24 November) was on Muretha Plateau at the altitude of 1860 m, in a mosaic of grassland and small forest patches. From there the Manho Forest was also explored on six days. In addition two days were spent in Ukalini Forest (at the foot of Namuli peak, the main forest being in a saddle at 1580-1750 m), and several hours in mid-altitude forest along the Malema and Nanchili streams (1200-1300 m). Some 130 bird species were observed on this trip. With earlier surveys, starting with Vincent (1933-36), the total number of species recorded above 1200 m is about 155 species.

The forests of Namuli are especially important in respect of Namuli Apalis *Apalis (thoracica) lynesi* (endemic to Namuli, RDB category: **Vulnerable**) and Dapple-throat *Modulatrix (Arcanator) orostruthus* (**Vulnerable**). The latter is represented by the nominate endemic race; two other populations occur in the mountains of eastern and central Tanzania. The Namuli forests also contain significant numbers of the **Endangered** Cholo Alethe *Alethe choloensis* (endemic to south-east Malawi and adjacent northern Mozambique) and of the race *belcheri* of Green Barbet *Stactolaema olivacea* shared with Thyolo Mountain, Malawi, and recently discovered on Mabu Mountain, half-way between Namuli and Thyolo. Since the forest on Thyolo has been totally destroyed in recent years, Namuli has acquired special importance for the conservation of this race.

Another two species of conservation concern have been discovered on the mountain during this survey: the Spotted Ground Thrush *Zoothera guttata* (**Endangered**) and White-winged Apalis *Apalis chariessa* (**Vulnerable**). The former is present in the larger forests of Manho and Ukalini; it has only recently been discovered in Mozambique (a couple of records of winter migrants on the southern coast, Parker 2005) and its presence on Namuli in the breeding season is the first indication that the species should breed in Mozambique. It is known to breed in only a few mid-altitude forests in eastern Africa. The White-winged Apalis is not a high-altitude species and was found in riparian forest at 1200 m; it appears to be very rare on the wet side of the mountain and should be searched for on the drier slopes. It is otherwise known today only from mid-altitude forest in central Tanzania, south-east Malawi and Chipe-rone Mountain.

The discovery of Eastern Green Tinkerbird *Pogoniulus simplex* is of biogeographical interest. This is an Eastern endemic previously known from only one site in Mozambique (in coastal thicket near Maputo). It must be more widespread in the country as it is common on Mangochi and Namizimu Hills of eastern Malawi right next to the Mozambique border. It is apparently uncommon on Namuli, singles having been found in Manho and near the Nanchili stream.

Based on a week's survey in 1998, Ryan *et al.* (1999a) proposed unusually high figures of densities for all species counted. Their data used a statistical formula which had not previously been tested against facts, and most of their counts were done at low altitudes, while the main montane forest (Manho) was not visited. Carefully measured territories of the same species on Muretha, and especially the intensive studies of territorial requirements of forest birds (of the same or closely-related species) on the Nyika Plateau, Malawi, suggest that their figures are unrealistic, being too high by a factor of 5 to 30. The figures now proposed for several endangered species above the altitude of 1500 m are of the order of a few dozen pairs for Green Barbet and Cholo Alethe, 300-500 pairs for Dapple-throat and at least 700 pairs for Namuli Apalis. Alethes and Namuli Apalis are also common in mid-altitude forest, but this habitat is disappearing fast.

Attention is drawn to the fact that two Afromontane species with a wide East African range are represented on Namuli by very small populations, centred on the small patches on Muretha: these are Eastern Mountain Greenbul *Andropadus nigriceps* and Olive Thrush *Turdus olivaceus*.

The montane avifauna of Namuli is compared to that on the larger mountain of Mulanje, in adjacent Malawi. Of the few Afromontane endemics missing from Namuli, the most notable is the Blue Swallow *Hirundo atrocaerulea* (**Vulnerable**), normally common in montane grassland. Its absence is apparently due to the nature of the grassland and the peaty or rocky substrates, depriving the swallows of suitable nest sites. The Red-tailed Flufftail *Sarothrura affinis* may also be absent from the Namuli grasslands (a single sight record by P. Ryan is considered in need of confir-

mation). In general, further surveys are necessary, especially of the other sections of the extensive Namuli massif, and of several smaller mountains in the vicinity. They all bear significant areas of forest still completely unexplored.

1. Introduction

Namuli Mountain is one the two largest mountains in Mozambique (with a granitic peak, or dome, rising to 2419 m), the other being the Chimanimani Mts on the Zimbabwe border (2436 m). It is 160 km to the north-east of Mount Mulanje in Malawi (3002 m), the tallest mountain in south-central Africa. Namuli (15°23'S) and Mulanje Mts (16°00'S) are at the southern end of the Tanzania-Malawi montane sub-group, with several bird species reaching their southern limits of range here. Most of what we know of the avifauna of Namuli dates from 1932, when Jack Vincent spent three weeks collecting birds for the British Museum (Vincent 1933, 1933-36). The area was not revisited until 1998, when Ryan *et al.* (1999a) spent a week there. Most of northern Mozambique remains very poorly known with many areas completely unexplored. By contrast the avifauna of adjacent Malawi has been studied by many people over more than 100 years, and a detailed ecological account of its avifauna, with distribution maps, was recently published (Dowsett-Lemaire & Dowsett 2006). The authors of this book were particularly interested in montane forest avifaunas, which they studied for five years (e.g. Dowsett-Lemaire 1983, 1985a, 1988b, 1989b, Dowsett 1985).

Vincent collected two bird species new to science: the enigmatic Dapple-throat *Modulatrix orostruthus* (initially placed in a bulbul genus *Phyllastrephus* and more recently either in *Modulatrix* or in its own genus *Arcanator*, probably a babbler), and Namuli Apalis *Apalis (thoracica) lynesi*. The latter is endemic to Namuli but is a close relative of Bar-throated Apalis *A. thoracica*, a forest apalis of eastern and southern Africa with many geographical races. Vincent also discovered populations of the endangered Cholo Alethe *Alethe choloensis* (a species endemic to south-eastern Malawi and adjacent northern Mozambique) and of the race *belcheri* of Green Barbet *Stactolaema olivacea*, shared with Thyolo Mountain in southern Malawi, now almost totally deforested (Dowsett-Lemaire & Dowsett 2006).

From a week's survey Ryan *et al.* (1999a, 1999b) proposed exceptionally high estimates of densities of the commoner bird species (cf. cautionary remarks in the account of Cholo Alethe and other species in BirdLife International 2000). Two other visits (by Melo *et al.* in 2001, R. Demey in 2007) were either too short or ill-timed to study bird densities. Thus one of the main purposes of this survey was to re-evaluate densities of a number of key species for which the conservation of Namuli is especially important, and search for other forest or grassland bird species that might have been overlooked in previous visits.

Study area

The peneplain between Mulanje and Namuli lies at an altitude of 600-700 m, and used to be covered in miombo woodland, most of it now replaced with cultivation. The access to Namuli is via the small town of Gurue, on the southern side. Before reaching Gurue from the Malawi border, several mountains are visible along the way, especially to the north of the road; most of them bear significant areas of evergreen forest, still totally unexplored. Namuli Mountain is part of a fairly extensive plateau (covering at least 50 km from west-east and 40 km north-south) above the altitude of 1100 or 1200 m (map of the Operational Navigation Chart, USA, 1: 1 million). The vegetation of the massif is a mosaic of forest, grassland and large granite domes. The forest left on Namuli Mtn *sensu stricto* (excluding other sections of this basal plateau) is of the order of 1300 ha, most it being occupied by a large dissected block on the south-western slopes of Muretha Plateau (c. 1000-1100 ha), "Manho Forest". Most of Manho Forest is comprised between 1700 and 1800 m alt., but some forest goes down to 1500-1600 m on the south-western slopes, and some lower-canopy forest or scrub forest ascends some rocky slopes and ridges up to 2000 m or slightly higher, including around two subsidiary peaks (Peseni or Pesse, and Pilani, 2150 and 2300 m). The most extensive grassland is on Mur-etha Plateau at 1800-1900 m, but there are grassy spurs and slopes down to at least 1400 m. After Manho Forest, the second largest single block is Ukalini Forest, lodged against the bottom of the Namuli dome itself, in a saddle at 1580-1750 m; it is prolonged by two main galleries to the north-west and south-west, rising to about 1900 m. The saddle and galleries combined cover c. 100 ha; the tall-canopy forest in the saddle covers between 65 and 70 ha. Strips of riparian forest occur on the lower slopes, mainly from 1150-1450 m. These mid-altitude forests used to be more extensive (see below), but had already been greatly reduced by the late 1960s, when the aerial photos were taken. They continue to regress from fires and direct logging.

Historical background

Vincent (1933) camped on Namuli from 21 July to 10 August 1932. He used a single base camp, in forest at 1400 m (4600 feet) on the Nanchili stream, just below the Ukalini cliff and forest. From there he collected mainly at higher altitudes, from 1370 m (4500 feet) to nearly 2000 m on the Murukuni ridge. He recorded about 68 different species, of which 53 were represented by a collection of some 250 specimens (Vincent 1933: 326). Details were published in *Ibis* in 1933-36. Vincent was on Namuli in the winter months, when some intra-African migrants are totally absent. He had already collected on Mulanje and Thyolo Mts in adjacent Malawi in 1931, and recognized many of the same species on Namuli, including the same race of Green Barbet *Stactolaema olivacea belcheri* as on Thyolo.

Peter Ryan and five colleagues spent a week on the mountain from 27 November to 4 December (Ryan *et al.* 1999a). They spent more time at lower altitudes, on the Nanchili stream in "Ukusini" Forest (with camps at 1250 m near the bridge, and down to 1160 m), and just three days camping on the lower edge of Ukalini Forest (at "1550 m", perhaps more likely 1580 m): on one of those three days they visited Muretha Plateau and some of Manho Forest. Ryan

et al. recorded some 112 species from 1200 m (excluding birds of secondary habitat noted on the lower slopes or around Gurue town). Some mist-netting was carried out in Ukalini and Ukusini: 64 birds of 16 species were caught and ringed. Three participants carried out 72 point counts from which densities were extrapolated (see below). Ryan *et al.* also spent a few hours exploring a small patch of relict forest at 1300-1400 m on the drier, south-west slopes of the massif, just above Gurue.

Martim Pinheiro de Melo and two colleagues (Melo *et al.* n.d.) paid a short visit to Namuli in December 2001. Walking all the way from Gurue, they spent two days in Ukalini Forest (from 2-4 December) and two days on Muretha (4-6 December). They crossed the Malema river somewhere below the altitude of 1200 m (M. Melo pers. comm.). They did a limited amount of mist-netting, ringing 22 of the 37 birds caught. The number of bird species they identified at Ukalini and Muretha is about 46.

The Field Museum of Natural History, Chicago collected birds on Namuli in July-August 2003, from a base camp at 1707 m (apparently on the edge of Manho) and another in the Malema Valley at "Murabue", 1111 m, which is outside our study area. More collecting was done in November 2004, but details are not available.

The Kew/Maputo/Zomba herbarium expedition spent two weeks on the mountain from 22 May to 5 June 2007. The main base camp was on Muretha Plateau, at 1860 m (24 May-1 June), and the other next to the Malema river bridge at 1250 m. They were accompanied by the ornithologists R. Demey and (for one week) by C. Bento. Demey (2007) explored mostly the Muretha Plateau and parts of Manho Forest (referred to as "large patch on Muretha" in the report); he also spent a few hours in Ukalini (3 June) and a few days around the Malema river (at 1250 m and below). Taking again the altitude of 1200 m as a lower limit, he noted some 94 species.

The present expedition re-used the two same base camps, on the Malema river and Muretha Plateau, from 14-26 November 2007. The itinerary of various participants was somewhat different, my own movements and timetable being as follows:

- 14 November: the Malema river (1250 m) was reached by road at midday, from Gurue. Heavy rain shower in the afternoon. Spent a few hours midday, evening and next morning exploring the narrow strip of riparian forest and adjacent secondary growth.
- 15 November: mid-morning climb to Muretha Plateau, where camp established for 9 nights, at 1860 m. Divided my time between small forest patches on Muretha, surrounding grassland, and the big Manho forest. The main section of Manho visited on 5 successive days (16-20 Nov.) lies between 1700-1820 m, and on 21 Nov. I went down to another section to the south-west, reaching *c.* 1600 m alt. On 17 Nov. a guide took us on a round circuit through the forest (see below), up on a ridge (1900 m) with secondary growth and back to camp across grassland from the north-west side. Heavy afternoon storms on 18, 19 and 20 Nov. (starting as early as 11 a.m. on the 20th) reduced observation time.
- 24 November: morning walk across Muretha and down a grassy spur to reach the Natchuko valley and on to the Ukalini Forest. This approach meant a drop from 1880 m to *c.* 1500 m and then to the top of the Ukalini cliff (at 1550 m), just below the forest. Tent set up inside the forest at 12 h. Two days in Ukalini Forest and surroundings, from 1550 to 1750 m.
- 26 November: early afternoon walk down the Nanchili valley, from Ukalini to the start of the road at 1250 m. Observations in the Ukusini forest (or what is left of it) above and below the bridge in late afternoon. (Night on the Malema river). 26 Nov.: another 3 hours spent in Ukusini, from 6 to 9 a.m., in particular in woodland and forest below the bridge, reaching an altitude of *c.* 1200 m on the Nanchili stream, just above a large waterfall.

I was accompanied by Tiwonge Mzumara from 14-17 November; Tiwonge left Namuli on the 19th.

Methods

In addition to opportunistic observations, particular attention was paid to the location of key species such as Cholo Alethe or Green Barbet. Many species were tape-recorded, and playback of pre-recorded tapes was used to provoke a few species into song (e.g. Eastern Green Tinkerbird, flufftails *Sarothrura* spp.). Exact territory size was measured for Namuli Apalis (with the help of tape playback) and other species in several small patches on Muretha. In the short time available it seemed more important to establish real densities of species than use indirect quantitative measures (such as point-counts) that could not be tested against verified densities.

Nomenclature of woody plants follows White *et al.* (2001) and bird taxonomy follows that of the recent "Birds of Malawi" (Dowsett-Lemaire & Dowsett 2006).

2. Bird habitats

For the purpose of describing birds' ecology, the following broad habitats should be recognized:

Boulders and rock faces, the largest being the Namuli peak itself (summit at 2419 m), rising steeply from about 1800 m above Ukalini Forest. Several small rocky pinnacles emerge from Manho forest itself.

Grassland. Most of it is water-logged, on black peaty soil. Although looking from a distance like smooth montane grassland, it is very different from the dry montane grasslands of Malawi, being dissected by numerous water channels. It is thus very difficult to walk through, unless one follows the old game tracks (now used mainly by goats and people). Some small sections on ridges, close to the rock surface, have a shorter grass cover and

are somewhat less bumpy but can nevertheless become very wet during and after rain, when even the game tracks turn into temporary streams. The stream next to our camp on Muretha has vertical banks up to a metre in height, but after heavy rain, water came to the top and overflowed. Grassland is most extensive on Muretha itself, at 1800-1900 m, where it covers about 170 ha.

Bracken *Pteridium aquilinum* can form patches of up to one or several ha in grassland, in valleys or on ridges next to patches of forest. Some small bushes or tree saplings occur.

Montane shrubland. A dense mixture of bracken and small trees or shrubs, often up to 4 m in height, this formation is essentially fire-derived and not as extensive on Namuli as on Mulanje, and is very much more impoverished floristically. The principal woody plant is a robust Labiatae, *Tetradenia (Iboza) riparia*. There are very few plants attractive to sunbirds: for instance the red-flowered *Tecomaria capensis* is quite rare (one or two seen on Muretha and near Ukalini, with few or no flowers), and there are very few Proteas (none on Muretha around camp, a few near and below Ukalini were *P. welwitschii*).

***Syzygium cordatum* evergreen woodland or wooded grassland.** This is the only type of woodland seen anywhere on this trip. Much of it is evidently derived from *Syzygium cordatum* evergreen forest, having been opened up by fire and/or logging. On rocky slopes it may be naturally open. Although Ryan *et al.* (1999a, 1999b) mention "miombo" woodland in the vicinity of their camps near the Nanchili bridge, there is none. One or two *Brachystegia spiciformis* have been found in isolation (J. Timberlake pers. comm.); I did not see any in the area I visited. *S. cordatum* also forms closed-canopy forest at medium altitude, and dominates riparian forest on steep slopes (as just below Ukalini), as well as montane forest on ridges on Muretha. Most *Syzygium* woodland occurs on slopes at medium altitude (1200-1500 m), but there is some on rocky edges of Manho Forest etc. at much higher altitude (at 1800-1900 m). A photograph by Claire Spottiswoode and published in Ryan *et al.* (1999b: 140) of "*Brachystegia* woodland" in the foreground shows instead isolated trees of *Syzygium cordatum*.

Evergreen rain forest. For both vegetation and birds, it is useful to distinguish between two main types, mid-altitude (1200 to 1450 or 1500 m) and Afromontane (1500-2000 m), and floristics are described in more detail below. The altitudinal limit between the two is similar to that in southern Malawi: 1450-1500 m is roughly the limit above which some lowland tree species will not grow (e.g. *Newtonia*, *Albizia adianthifolia*), and below which several montane trees do not occur (e.g. *Faurea wenzeliana*, *Podocarpus latifolius*). The size of forest remaining in the study area is around 1300 ha, with the large block of Manho Forest covering at least 1000 ha.

3. Forest vegetation.

3.1. Mid-altitude forest.

Today this type is limited mainly to the vicinity of streams, but some areas (recently felled) also covered slopes, as above Malema river where several ha of *Parinari excelsa* forest are being cleared for cultivation. There is much active forest regeneration at 1250-1300 m alt. on both sides of the Malema river, dominated by *Harungana madagascariensis*, which suggests also that forest was more extensive; *Harungana* scrub occurs up to several hundred metres from the present edge of the forest. In a new field c. 50 m from the edge of the forest today I saw several dead forest trees, including the characteristic trunk of a strangling fig *Ficus* sp. There is a similar situation near the Nanchili stream, where several hectares of *Parinari-Newtonia* forest had just been cut on slopes adjoining the stream, to be planted with maize. Again, there is *Harungana* regeneration for up to 100 m away from streams in fallow cultivation. Some old, neglected cassava fields much further away from the Nanchili (just below the Ukalini cliff) have forest tree saplings regrowing through, e.g. of *Myrianthus holstii*.

A brief list compiled for the **Malema river** (1250 m) includes the following tree species: *Albizia gummifera* (some flowering mid-November), *Anthocleista grandiflora*, *Aphloia theiformis*, *Breonadia salicina* (ex-*Adina microcephala*), *Cussonia spicata*, *Ficus exasperata*, *F. sur*, *Newtonia buchananii*, *Parinari excelsa*, *Sapium ellipticum*, *Syzygium cordatum*, *S. guineense* (ssp. *afromontanum*). Large woody lianes include *Millettia lasiantha* (flowering, very common), also *Acacia montigena*, *Gouania longispicata*. Tree ferns *Cyathea dregei* are common, and also survive in secondary growth outside forest.

The forest strips on the **Nanchili stream** have much the same species, except that *Albizia adianthifolia* is the common species of that genus (easily recognizable at a distance by its dark and roughly-fissured bark) and *Bersama abyssinica* is also conspicuous. The three dominant canopy trees all the way from the bridge (1250 m) to just below Ukalini cliff (1450 m) are *Parinari*, followed by *Albizia adianthifolia* and *Newtonia*. The *Parinari* in the whole area are heavily parasitized by a species of Loranthaceae, with brownish leaves and bearing (in late November) small fruit. The canopy is at least 30 m tall.

At 1450-1500 m, in riparian strips on the steeper slopes on the southern side of the Ukalini cliff I noticed *Bridelia micrantha*, *Iboza riparia*, *Hymenodictyon floribundum* (on rocks), *Maesa lanceolata*, *Schebera alata*, *Nuxia congesta*, *Parinari* and *Syzygium cordatum*. *Trema orientalis* forms some small patches of secondary forest away from streams, with also *Albizia adianthifolia*.

Syzygium cordatum does form locally a monodominant forest with a lower, closed canopy (10-15 m high): several patches of this evergreen forest are conspicuous to the north of the Nanchili bridge, and also below the bridge down to the altitude of 1200 m. At that level, the forest has suffered somewhat less in recent years, and the *Newtonia* forest is still contiguous with the *S. cordatum* forest in places. On slopes above the Nanchili stream, on both sides, there are some patches of forest on secondary streams, dominated by *S. cordatum* and *Parinari* (at the altitude of around 1300-1350 m).

3.2. Afromontane forest.

The main part of **Manho Forest** lies between 1700 and 1800 m: the entrance to the forest from our camp is at 1710 m (15°23'57"S, 37°02'29"E); the main path continues along the contour line of around 1700 m, crosses a couple of grassy clearings before re-entering forest to reach the upper edge at 1800 m, just below a small cliff (15°23'44"S, 37°01'50"E). The "circuit route" takes one through more forest until an open ridge is reached (1900 m, 15°23'13"S, 37°02'29"E), with forest on either side, in steep gullies. The section from the entrance to the small cliff was visited on four successive mornings (17-20 Nov.), after exploring the entrance area on the 16th. The lower section of the forest (around the Manho stream) seen on 21 Nov. is to the south-west.

At 1700-1800 m, the canopy is about 20-22 to 25 m high, with emergents reaching 25-30 m. Below 1700 m, the canopy height increases to 25-30 m. Emergents belong to 4 species, *Faurea wentzeliana* being probably the most numerous, closely followed by *Cryptocarya liebertiana*. Around a small grassy clearing at 1720 m I counted 7 *Faurea*, 6 *Cryptocarya*, 3 *Olea capensis* and 1 *Ekebergia capensis* in my field of view. At 1650 m to the south-west, I counted 2 *Faurea* for 5 *Cryptocarya*, 5 *Olea* and 1 *Ekebergia*.

At 1800 m, 22 canopy trees (with emergents) identified near the edge of the forest, below a small cliff, included: 4 *Albizia gummifera*, 1 *Aphloia*, 1 *Cassipourea malosana*, 1 *Cryptocarya*, 2 *Ekebergia*, 3 *Faurea*, 2 *Olea*, 2 *Polyscias*, 1 *Prunus*, 1 *Rapanea*, 4 *Syzygium guineense*.

A list of tree species reaching at least locally the canopy (18-22 m), between 1700-1800 m, should include the following: *Albizia gummifera*, *Anthocleista grandiflora* (near edges or in gaps), *Aphloia theiformis*, *Apodytes dimidiata*, *Bersama abyssinica*, *Cassipourea malosana*, *Canthium vulgare*, *Cryptocarya liebertiana*, *Cussonia spicata* (gaps), *Drypetes gerrardii*, *Ekebergia capensis*, *Eugenia capensis*, *Faurea wentzeliana*, *Garcinia kingaensis*, *Ilex mitis* (streams), *Macaranga capensis*, *Maytenus acuminata*, *Olea capensis*, *Pittosporum viridiflorum* (edges, gaps), *Podocarpus latifolius*, *Polyscias fulva*, *Prunus africana*, *Rapanea melanophloeos*, *Schefflera umbellifera*, *Tabernaemontana stapfiana*. Below 1700 m *Chrysophyllum gorungosanum* appears (as well as *Myrianthus holstii* in the understory), but I did not see any strangling figs down to 1600 m; J. Bayliss (pers. comm.) saw one *Ficus* sp. near the lower edge of the forest at 1500 m.

Understorey trees and woody shrubs include: *Alchornea hirtella* (common), *Allophylus chaunostachys*, *Canthium oligocarpum*, *Carissa bispinosa*, *Chassalia parvifolia*, *Diospyros natalensis*, *Dracaena laxissima*, *Erythroxylum emarginatum*, *Ixora scheffleri*, *Lasianthus kilimandscharicus* (very common), ?*Metarungia pubinervia* (large Acanthaceae shrub with entire leaves, but sterile), *Mimulopsis solmsii*, *Mostuea brunonis*, *Ochna holstii*, *Oxyanthus speciosus*, *Pauridiantha paucinervis*, *Peddiea africana*, *Piper capense* (near streams), *Psychotria zombamontana*, *Rawsonia lucida*, *Rytigynia uhligii*, *Tricalysia* sp., *Xymalos monospora*.

Myrica humilis is a dominant medium-sized tree at forest edges, and other edge species include *Buddleja salviifolia*, *Cussonia spicata*, *Myrsine africana*, *Nuxia congesta*, *Syzygium cordatum*, and *Iboza riparia* (especially in rocky situations).

Large woody lianes are dominated by *Schefflera goetzenii*. *Rutidea orientalis* is also very common, and other species include *Canthium gueinzii*, *Hippocratea goetzei*, *Toddalia asiatica*, *Urera hypselodendron*. The fern flora is quite diverse, both in terrestrial and epiphytic species.

The floristic composition of small patches on the **Muretha Plateau** at 1850-1880 m does not differ much from that of Manho. Patches situated on the ridge just above the escarpment are more exposed to fires and contain more secondary, partly fire-resistant species, and others on slopes near stream are more diverse.

Three patches I examined in the first situation had the following tree species (the taller trees reaching 17-20 m, above a canopy around 15 m): *Aphloia theiformis*, *Ekebergia capensis* (17 m), *Macaranga capensis*, *Maesa lanceolata*, *Myrica humilis*, *Nuxia congesta*, *N. floribunda*, *Olea capensis* (20 m), *Podocarpus latifolius*, *Prunus africana*, *Rapanea melanophloeos*, *Schefflera umbellifera*, *Syzygium cordatum*, *S. guineense*. A count of canopy trees in a narrow patch 100 m long gave the following result: 9 *Syzygium cordatum*, 8 *Myrica*, 6 *Prunus*, 3 *Aphloia*, 3 *Macaranga*, 3 *Olea*, 3 *Rapanea*, 1 *Ekebergia*, 1 *Podocarpus*, 1 *Syzygium guineense*.

Two patches north of our camp and about 100 m upstream, measuring 1.4 and 1.5 ha respectively, have a canopy height of 15-20 m, with a few taller trees (20-25 m). Their floristic composition is very close to that in Manho: *Aphloia theiformis*, *Cassipourea malosana* (emerging), *Cryptocarya liebertiana* (ditto), *Ekebergia capensis*, *Faurea wentzeliana*, *Macaranga capensis*, *Olea capensis* (some emerging), *Podocarpus latifolius*, *Prunus africana*, *Rapanea melanophloeos*, both *Syzygium*. Understorey: *Carissa bispinosa*, *Cassine aethiopica*, *Diospyros whyteana*, *Dracaena laxissima*, *Drypetes gerrardii*, *Erythroxylum emarginatum*, *Lasianthus kilimandscharicus*, ?*Metarungia pubinervia*, *Mimulopsis solmsii*, *Ochna holstii*, *Peddiea africana*. Lianes include *Artabotrys monteiroae*, *Canthium gueinzii*, *Landolphia* sp. (not *buchananii*, small green flowers), *Psychotria ealaensis*, *Rutidea orientalis*, *Schefflera goetzenii*, *Toddalia asiatica*...

Woody species at edges are dominated by *Myrica humilis*, then *Kotschya* sp., more locally *Iboza riparia*. *Erica* (*Philippia*) *benguensis* reaches 10-12 m in places, and can also be found inside forest in gaps. On a ridge at 1900 m on the circuit route, small trees emerging above the bracken were mainly *Kotschya* sp., *Erica benguensis*, *Iboza* and *Syzygium cordatum*.

Finally, *Ilex mitis* is always found in the proximity of streams.

Ukalini Forest. The most luxuriant section of the forest, 25-30 m tall, lies in a saddle just below the sheer cliff of Nam-uli peak, at an altitude of 1600-1750 m; two broad galleries ascend to the south-west and north-west, up to about 1900 m and have a shorter canopy. The whole of the forested area covers about 100 ha, with 65-70 ha in the saddle.

I explored only the forest in the saddle, and its composition (in trees and birds) suggests that the microclimate is significantly warmer than at similar altitude in Manho: a few strangling *Ficus scassellatii* occur from 1600 to at least 1700 m; several *Strombosia scheffleri* are found around 1600 m, *Chrysophyllum* and *Myrianthus* are common all the way to 1750 m and possibly above that.

Emergents are much the same (with *Faurea*, *Cryptocarya* and *Olea* all common, and some very big *Ekebergia*). Larger trees (reaching the canopy) include: *Albizia gummifera*, *Anthocleista grandiflora*, *Aphloia theiformis*, *Apodytes dimidiata*, *Canthium vulgare* (one reaching c. 28 m!), *Chrysophyllum gorungosanum*, *Cryptocarya liebertiana*, *Drypetes gerrardii*, *Ekebergia capensis*, *Faurea wentzeliana*, *Ficus scassellatii* (syn. *F. kirkii*), *Garcinia kingaensis*, *Ilex mitis* (streams), *Macaranga capensis*, *Ochna holstii*, *Ocotea kenyensis*, *Olea capensis*, *Polyscias fulva*, *Prunus africana*, *Rapanea melanophloeos* (with one reaching 30 m), *Strombosia scheffleri*, *Syzygium guineense*, *Tabernaemontana spaffiana*.

Understorey trees and woody shrubs: *Alchornea hirtella*, *Aulacocalyx diervilloides*, *Canthium oligocarpum*, *Cassine aethiopica* (stream), *Chassalia parvifolia*, *Diospyros natalensis*, *Dracaena laxissima*, *Englerophytum magalimontanum*, *Erythroxylum emarginatum*, *Ixora scheffleri*, *Lasianthus kilimandscharicus*, *Myrianthus holstii*, *Peddiea africana*, *Psychotria zombamontana*, *Rawsonia lucida*, *Rytigynia uhligii*, *Tricalysia acokantheroides*, *Vepris stolzii* (widespread, reaching at least 12 m).

Lianes: *Canthium gueinzii*, *Landolphia buchananii*, *Mussaenda arcuata*, *Rutidea orientalis*, *Schefflera goetzenii* (dominant), *Secamone alpini*, *Toddalia asiatica*, *Urera hypselodendron*. Trees at edges include *Trema orientalis*.

A count of canopy trees from the interior, c. 1650 m on a flat section, in a radius of about 15 m, gave the following: over 12 *Garcinia kingaensis*, 3 *Cryptocarya*, 2 *Faurea*, 1 of all other species (*Apodytes*, *Canthium vulgare*, *Chrysophyllum*, *Drypetes*, *Ochna*, *Olea*, *Tabernaemontana*).

The lower section of Ukalini, at 1580 m and just below, was cleared by logging over several hectares; a few trees left belong to *Anthocleista* and *Syzygium guineense*, some of the trees logged were *Albizia gummifera* (still recognizable from their bark). Tree ferns *Cyathea dregei* are common in the luxuriant regrowth in that area.

3.3. Fruiting seasons; fruits available to birds.

In November 2007, little fruit was available to birds at any altitude. The main source on Muretha was the tree *Schefflera umbellifera* (Araliaceae) and the liane *Rutidea orientalis* (Rubiaceae). The *Schefflera*, with small, oily fruit, is important for the Rameron Pigeon (Dowsett-Lemaire 1988b), but it is much less common than on Mulanje and Zomba/Malosa in Malawi. On Muretha, *Schefflera* fruits were taken by Ramerons, *Andropadus* bulbuls (Mountain and Stripe-cheeked Greenbuls) and Olive Thrushes. *Rutidea orientalis* has sweet orange fruit, readily eaten by bulbuls (Mountain and Stripe-cheeked Greenbuls on Muretha). In the liane *Schefflera goetzenii*, fruits were present but still completely unripe.

Olea capensis (Oleaceae), another key fruit tree for Ramerons and other species, was not fruiting this year, but flowering (synchronously). *Olea* has a biannual cycle (Dowsett-Lemaire 1985b) and numbers of Ramerons are proportionate to the number of fruiting *Olea* in a given area, thus they should be expected to increase in even years (2008 etc.). *Cryptocarya* (Lauraceae), an important emergent, was flowering everywhere, apparently with perfect synchrony. On the Nyika I saw fruit in August-October, and the tree appears to have a biannual cycle (on the Nyika the fruits are eaten by Ramerons and Turacos). Another big tree, *Ekebergia capensis* (Meliaceae), produces fruits towards the end of the rains (February-May in northern Malawi), and both *Syzygium* tree species (Myrtaceae) in the middle of the rains (from December-January). In a few *Syzygium cordatum* at low altitude (1200 m) some fruits were just beginning to ripen in late November, and were readily sought by Livingstone's Turacos.

Polyscias (Araliaceae) is very local on Namuli (surprisingly not fruiting, even though fruiting is not over by November in adjacent Malawi). *Podocarpus latifolius* (Podocarpaceae) is uncommon, and fruiting was just over (some seeds were still present on a few trees, but the arils had fallen). The common edge tree *Myrica humilis* (Myricaceae) has small, waxy, oily fruit also much appreciated by birds but crops were still largely unripe (they should be fully ripe in December). A few birds were beginning to take *Myrica* fruit towards the end of the month, mainly White-necked Raven and Ramerons.

Aphloia theiformis (Flacourtiaceae) has conspicuous white berries which were fully ripe at medium altitudes (Malema, Nanchili), as well as in Ukalini, not yet in Manho or on the Muretha Plateau (this further supports the suggestion above that the microclimate at Ukalini is warmer than at Manho). *Aphloia* trees fruit yearly and all fruiting trees were very popular with small birds and turacos: as many as 8 species of birds were seen eating them (Livingstone's Turaco, Green Barbet, White-eared Barbet, Golden-rumped Tinkerbird, Little Greenbul, Striped-cheeked Greenbul, Black-eyed Bulbul, Red-winged Starling). Ramerons have never been reported eating those, perhaps because they are not sufficiently rich in oils.

Prunus africana (Rosaceae) is another tree with a biannual cycle, but unlike *Olea* they are not synchronous: most trees on Namuli were flowering, a few were fruiting (one had a Rameron eating its fruits), and some were renewing foliage.

Macaranga capensis (Euphorbiaceae) has small oily green fleshy capsules, popular with many birds (who eat them before they dry out and split open). Only a few trees were seen with (late) fruits, eaten by Greenbuls and White-eared Barbet (Ukalini).

Of the trees with large "bat-fruits", such as *Chrysophyllum gorungosanum* (Sapotaceae) and *Parinari excelsa* (Chrysobalanaceae), I saw no fruits at all on *Chrysophyllum* (in Malawi normally fruiting in August-December, but not annually), while *Parinari* fruits (this large tree has annual crops), were just beginning to ripen and attracted large

numbers of *Eidolon* bats.

Not as many tree species were in fruit on Namuli as would have been the case in adjacent Malawi at this time — cf. *Maesa* (some flowering, none with ripe fruit), *Polyscias* (inactive). It is possible that some trees were out of cycle because of the heavier rainfall experienced by Namuli, including in winter. But there is no doubt that 2008 will be much more of a fruiting year, with two important trees producing fruits then (*Cryptocarya*, *Olea*) and more *Prunus* than this year, as the majority in 2007 were in flower.

Loranthaceae. This group of semi-parasitic plants has great importance for the mistletoe specialists, i.e. certain species of tinkerbarbets. In montane or lowland (mid-altitude) forest in eastern Africa, these are respectively Moustached Green Tinkerbird and Eastern Green Tinkerbird. In Malawi, the former exists in high densities only where there is a continuous production of mistletoe fruits throughout the year, i.e. in forests with at least 4-6 species producing fruits at different, complementary seasons (Dowsett-Lemaire 1988b). In southern Malawi, Moustached Green Tinkerbird is common around Dedza and in the Kirk Range, but very local east of the Rift, with a small population on parts of Mulanje (the southern limit of its range, Dowsett-Lemaire & Dowsett 2006). It is replaced on Mangochi and Nami-zimu Hills by the Eastern Green Tinkerbird.

The mistletoe flora on Namuli is species-poor, although one species can be very common at a certain altitude. A species of *Erianthemum* (*dregei*) is very common on *Myrica* trees on the Muretha Plateau; they were in flower-buds the whole of November. A species of *Agelanthus* or *Tapinanthus*, with pink flowers, is common in Manho and Ukalini Forests, and another species (with red-yellow flowers) at lower levels in Manho. None were fruiting. Finally, in mid-altitude forest, one species was very common on *Parinari*, and was apparently fruiting. There is therefore no continuous fruit production for a specialized tinkerbird at any level, and it is not surprising that the species found on this survey (Eastern Green) occurs in very low numbers.

4. The avifauna

4.1. Annotated bird list.

This includes all species recorded within the study area above an altitude of 1200 m. Species not recorded by me but mentioned in earlier surveys are in brackets. Additional information on the distribution or ecology of species provided by earlier surveys is also included. The chorological status of species restricted to a single biome is indicated, i.e. Afrotropical, Eastern or Zambezi. The level of threat of species included in the Red Data list (BirdLife International 2004) is highlighted in bold.

The Chicago Field Museum's web site contains a straight list of all specimens collected in 2003, with dates. These include 50 birds of 17 species taken at 1707 m (apparently Manho), and 70 specimens of 34 species taken at Murabue (Malema Valley, 1111 m). The collection from the mountain adds nothing to what is known already (the top three spp. collected are 7 *Cossypha anomala*, 6 *Andropadus milanjensis*, 6 *Modulatrix orostruthus*). The collection from lower down adds two new records for the massif: Cape Grass Owl *Tyto capensis* (a rare species of dambos and montane shrubland) and Grey-olive Bulbul *Phyllastrephus cerviniventris*. I had a possible sight record of the latter on the Malema river at 1250 m, too brief to be certain. Four montane species were collected in riparian forest below the altitude at which they normally breed, which indicates altitudinal migration in the off-season (early August): 2 *Alethe choloensis*, 1 *Pogonochla stellata*, 3 *Elminia albonotata*, 2 *Nectarinia mediocris*. As Murabue is outside our study area, these details are not included in the combined list below.

White-throated Nicator *Nicator gularis* was recorded once by Ryan *et al.* (1999a) from riparian forest low down. The altitude was in fact near 1160 m (J. Graham *in litt.*), thus the qualification of this bulbul as common around 1250 m (Ryan *et al.* 1999b) was in error. On the southern slopes of Mt Mulanje, this bulbul does not ascend above 800 m and in the whole of south-east Malawi is not recorded above 1100 m (in the Thyolo area, Dowsett-Lemaire 1989b). A few more species recorded below 1200 m are likely to wander occasionally a bit higher, such as Bronze Mannikin *Spermestes cucullata*. Red-throated Twinspot *Hypargos niveoguttatus* was recorded by Melo *et al.* on the Malema below 1200 m.

[Hamerkop *Scopus umbretta*. One record by Demey (2007) on the Malema. Ticked for Muretha by Melo *et al.*: this can be no more than a vagrant this high.]

African Black Duck *Anas sparsa*. Present on the wider forest streams: singles and a pair flying over the Malema river. One flushed in Manho on a wide stream at 1700 m by C. Bruessow (pers. comm.). Vincent (1933-36) had apparently flushed three ducks of this species in the stream at the bottom of Ukalini Forest (1550 m), but had misidentified them as Hottentot Teal (see below).

Black-shouldered Kite *Elanus caeruleus*. Two singles in open farmland at c. 1300 m. Similarly recorded by others (Ryan *et al.*, Melo, Deme.).

[Black-breasted Snake Eagle *Circaetus pectoralis*. One record by Ryan *et al.* (1999a) at c. 1250 m, and a winter record by R. Demey on Muretha 1 June 2007. Unlikely to be resident as high as Muretha.]

Gymnogene *Polyboroides typus*. One seen between the Muretha scarp and Ukalini (c. 1600 m).

Black Goshawk *Accipiter melanoleucus*. A pair flying around riparian and *Parinari* forest on the Malema (14 Nov. 2007).

[Little Sparrowhawk *Accipiter minullus*. An adult at forest edge on the Malema, 1 June (Demey 2007).]

African Goshawk *Accipiter tachiro*. One holding a territory on Muretha, singing after rain on 20 Nov. Captured an Eastern Mountain Greenbul in another patch (23 Nov.). One singing over Ukalini Forest at dusk (25 Nov.).

- Likely widespread throughout forest in small numbers. Demey (2007) mentions a family with two juveniles on the Malema, 1-5 June.
- Lizard Buzzard *Kaupifalco monogrammicus*. Noted by me only at low altitudes (below 1100 m) in farmland, and its song was imitated in the song of a Red-capped Robin (on the Nanchili, 1200 m). Demey (2007) had a winter record on the edge of the Malema (2 June). This species shows altitudinal movements in the cold season (cf. Dowsett-Lemaire & Dowsett 2006).
- Common Buzzard *Buteo buteo*. Palaearctic migrant: a few wintering in the area, 1200-1900 m.
- Augur Buzzard *Buteo augur*. A pair seen regularly over Muretha (and attacked frequently by Lanners whenever they entered their territory), and over towards Peseni peak.
- [Tawny Eagle *Aquila rapax*. One seen by Demey (2007) near the Malema on 1 June. Not a species of high altitudes nor wet mountains, this can be no more than a vagrant.]
- Booted Eagle *Hieraaetus pennatus*. Palaearctic migrant, one in brown phase on 16 Nov., attacked by the local Lanners. One previous record by Ryan *et al.* at c. 1250 m ("camp 2"), no date.
- Crowned Eagle *Stephanoaetus coronatus*. No record since Vincent (1933-36) in 1932. In 2007 one pair was present around the Manho Forest towards Peseni: singing was heard twice in that area (17-18 Nov.), at midday. None heard or seen over Ukalini. As the defended territory is at least 10 km² and hunting range even bigger (in areas much richer in game than Namuli is today), it is unlikely that Namuli holds more than one pair. Vincent writes that he saw the bird daily over his camp (below Ukalini) and that on one occasion it tried to catch his pet mongoose, and in the process actually collided with a tent-rope! On another occasion he saw it capture a hare from a rocky slope.
- Rock Kestrel *Falco tinnunculus*. One pair feeding two full-grown juveniles on a small rocky outcrop above Manho Forest (15°23'44"S, 37°01'50"E), 1820 m. Another seen between Muretha and Ukalini.
- Eurasian Hobby *Falco subbuteo*. Palaearctic migrant, with one seen over Muretha 16 Nov. 2007.
- Lanner Falcon *Falco biarmicus*. One pair occupying a territory over part of Manho Forest and adjacent grassland, around a rocky pinnacle where they were probably breeding. Very aggressive towards other Lanners and raptors. Also noted lower down (Malema) by Demey on 1 June 2007.
- Peregrine Falcon *Falco peregrinus*. One pair breeding on cliff of Namuli peak directly over Ukalini, with prey brought to noisy partner or young a few times a day. The different species of Falconidae on Namuli have apparently divided the area into separate territories to avoid competition. Ryan *et al.* (1999b) noted the Peregrine in the same area.
- Shelley's Francolin *Francolinus shelleyi*. Around rocky hills (up to at least 1900 m); heard occasionally in the evening or early morning.
- Hildebrandt's Francolin *Francolinus hildebrandtii*. A species of bracken scrub and forest edges, surprisingly uncommon (heard in two places only, Muretha lip and Manho). Vincent heard or saw several in 1932, from 1500-1900 m, and it is possible this bird has decreased through hunting.
- [Common Quail *Coturnix coturnix*. One record by Melo *et al.*, based on song (Dec. 2001) on the Muretha Plateau. Locally common in montane grassland elsewhere in the Tropics, including Malawi, but the wet, peaty meadows of Namuli are not very suitable for this species. I searched for it and failed to find or hear any. Status requires confirmation.]
- Helmeted Guineafowl *Numida meleagris*. Surprisingly encountered regularly in montane forest, in small patches on Muretha, the edge of Manho, in Ukalini, and in riparian forest on the Nanchili stream, at 1270-1900 m. Some heard singing at dusk. This is very unusual habitat for this species. R. Demey found some feathers on the Muretha Plateau although did not see any live bird. Previous records (Ryan *et al.*) are only from low altitudes, and Vincent did not notice any. Is it possible that Guineafowls were pushed into marginal montane habitat by hunting pressure?
- Red-chested Flufftail *Sarothrura rufa*. This is probably the only flufftail species present in the grasslands of Muretha Plateau, in peaty, wet meadows with fairly tall grass, at 1850-1880 m alt. Quite close to our camp I saw one flufftail in flight near the stream on 15 Nov. and could not identify it to species (it was probably a female). The song of Olive Thrush alerted me to the species when I noticed that one particular bird was often imitating the territorial call of *S. rufa* ("kuwa, kuwa...") in the ending of the song motif. On the afternoon of 20 Nov. tape playback of pre-recorded cassettes was used to sort out the problem: playback of Red-tailed Flufftail *S. affinis* song and call never produced any reaction (there and in other places on the plateau), but playback of *S. rufa* immediately got one bird to call back (with territorial calls). On 22 Nov. more time was spent exploring the peaty meadow upstream of our camp, which is quite extensive about 1 km above camp. Several Red-chested Flufftails were heard singing and calling, spontaneously or after playback, and one was tape-recorded at close range. The calls were heard near camp on two other days.
- Rameron Pigeon *Columba arquatrix*. Afromontane near-endemic and important fruit disperser. One territorial pair in a patch near our Muretha camp (occasionally up to 4 visiting the area), and a few birds in Manho Forest. Seen feeding on fruits of *Schefflera umbellifera*, *Prunus* (once), *Myrica* (22 Nov.). Likely to be more numerous in even years, when *Olea* and *Cryptocarya* will be fruiting. The absence of another favourite fruit tree *Cornus* (*Afrocrania*) *volkensii*, and the relative scarcity of *Schefflera* (both common on Mulanje and Zomba Mts in adjacent Malawi) means that Ramerons can never be as common here as on the high mountains of south-eastern Malawi. Only one seen in two weeks by R. Demey (24 May 2007), which is not surprising in this partial migrant.
- Cinnamon Dove *Aplopelia larvata*. Afromontane near-endemic. Widespread in small patches on Muretha and in Manho Forest, far fewer in Ukalini (only two encountered on the saddle).

- [Red-eyed Dove *Streptopelia semitorquata*. Vincent (1933-36) collected one in forest at 1460 m in Aug. Somewhat unusual for this woodland bird, but some individuals may visit mid-altitude forest for fruit. Noted at low altitudes by Ryan *et al.* and others, but absent in Nov. 2007.]
- Blue-spotted Wood Dove *Turtur afer*. A few in farmland or secondary growth at medium altitudes, up to 1400 m.
- [Tambourine Dove *Turtur tympanistria*. Vincent (1933-36) met a few in mid-altitude forest only, up to 1460 m. Also noted by Ryan *et al.* but not since. Obviously uncommon.]
- African Green Pigeon *Treron calvus*. One in riparian forest on the Malema, 1250 m (15 Nov.). This species is very fond of *Syzygium* fruit and could be more common in the area when these are in full fruit later in the rainy season. One shot by Vincent (Aug.) at 1460 m.
- Livingstone's Turaco *Tauraco livingstonii*. Common throughout forest, at all levels. Feeds on any fleshy fruit (in Nov. often *Aphloia*). Positions of calling birds on Muretha suggest territories of 4-5 ha per pair (each pair owning several small patches), fitting well with data from the Nyika for the sibling Schalow's Turaco *T. schalowi* (Dowsett-Lemaire 1983, 1989b).
- Red-chested Cuckoo *Cuculus solitarius*. Common and very noisy in small patches on Muretha Plateau, and at edges of Manho Forest. None heard inside Manho nor in Ukalini (some calling outside, in bracken scrub). A nest parasite of robins, almost certainly here of Cape Robin.
- Klaas's Cuckoo *Chrysococcyx klaas*. A few calling in riparian forest at 1200-1300 m. A resident species, also heard in June (R. Demey).
- Burchell's Coucal *Centropus superciliosus*. Small numbers in thick bracken scrub and at forest edges, 1200-1860 m.
- [Cape Eagle Owl *Bubo capensis*. Afromontane near-endemic. One record of this rare, localized species by Ryan *et al.* (1999b), heard at 1300 m. The inclusion of this species with a "?" in Melo *et al.*'s report is based on the observation of downy young in forest (Ukalini and Muretha), now considered to be Wood Owls (M. Melo pers. comm.). It is odd that the much commoner Spotted Eagle Owl *B. africanus* has not yet been noted on Namuli.]
- Wood Owl *Strix woodfordii*. Widespread in forest, at all altitudes; breeding records obtained by Melo *et al.* (see above).
- Freckled Rock Nightjar *Caprimulgus tristigma*. Likely common around rocky outcrops, but calling season almost over by November. Song heard only below the Muretha scarp (on 23 Nov., 1400-1500 m). Occasionally seen or flushed up to 1900 m (R. Demey, C. Bruessow, J. Bayliss pers. comm.).
- Scarce Swift *Schoutedenapus myoptilus*. Afromontane endemic. Small numbers seen over Manho Forest (any time), and over Muretha Plateau in the evening, also lower down (1300 m) in late afternoon. Aerial mating observed over Manho 20 Nov. An intra-African migrant, absent in the winter months (thus no records by Demey in May-June, nor by Vincent in July-Aug.).
- [? Mottled Swift *Apus aequatorialis*. Listed by Ryan *et al.* (1999a) for the surroundings of camp 1 (below Ukalini) and Gurue town. This rock-loving swift is indeed likely to occur around some cliffs, in small numbers, but see below.]
- African Black Swift *Apus barbatus*. The most numerous swift over Namuli, seen daily and concentrating at times into hundreds. Often feeds low over the lip of Muretha Plateau, and over rock faces (Namuli, Peseni, Ukalini cliff). In poor light can be confused with Eurasian Swift but the distinctive rasping calls were heard several times daily, also the high-pitched "tititititi" calls of recently fledged birds. Four pairs found breeding in a cleft on a small vertical cliff above Manho (c. 1840 m), feeding noisy nestlings. Curiously unrecorded by Ryan *et al.* (1999a, possibly through confusion with Eurasian or Mottled Swift), who also forgot to tick it in their table listing Vincent's records. Vincent (1933-36) collected them on Mulanje in Sep. 1931 (in breeding condition) and found them common on Namuli, seen daily around rocky faces, between 1500 and 2100 m alt. He even noticed the difference in calls.
- Eurasian Swift *Apus apus*. Palearctic migrant; identified only once, from its calls (no more than a few birds present in a very large flock of African Black Swift) on 17 Nov. 2007.
- Little Swift *Apus affinis*. Two-three birds once over Muretha, with other swifts. No sign of breeding on the mountain.
- Narina's Trogon *Apaloderma narina*. One singing in degraded *Parinari* forest near the Malema river (just above 1250 m), 15 Nov. Must have been more widespread at low altitudes but threatened by deforestation.
- Bar-tailed Trogon *Apaloderma vittatum*. Afromontane endemic. Not uncommon in Manho Forest, especially under closed canopy, 1600-1850 m. Less so in Ukalini. Absent from Muretha, where the patches are too small (minimum territory size of this bird being around 3 ha, Dowsett-Lemaire 1989b). Vincent (1933-36) collected 4 specimens, in "high forest" from 1400-1770 m. There is no more "high forest" at 1400 m below Ukalini suitable for this trogon, so this suggests the forest was significantly wider than today. The lower altitude birds met by Vincent may also have engaged in some altitudinal movements in the cold months, as some do in southern Malawi (Dowsett-Lemaire & Dowsett 2006).
- Half-collared Kingfisher *Alcedo semitorquata*. Present on large streams at lower levels (Malema and Nanchili).
- Pygmy Kingfisher *Ceyx pictus*. An intra-African migrant: two noticed at forest edge and in bush at lower levels (1250-1350 m) at the end of the trip (27 Nov. 2007).
- Blue-cheeked Bee-eater *Merops persicus*. Palearctic migrant, small groups passing high over Muretha Plateau daily (from 15-22 Nov. 2007), flying south.
- [Eurasian Bee-eater *Merops apiaster*. Palearctic migrant, noted by Ryan *et al.* below 1200 m, and by Melo *et al.* on Muretha. However, Melo *et al.* did not identify Blue-cheeked, and the timing of their visits was very late for Eurasian. Eurasian Bee-eater is a very widespread species that must pass over Namuli in season, but southward passage would be mainly around Sep.-Oct. Passage of Blue-cheeked Bee-eater is significantly later. I heard imitations of Eurasian Bee-eater in the song of a Red-capped Robin at 1200 m, the bird confirming

somehow that the bee-eater had been around. Neither Eurasian nor Blue-cheeked winter in montane areas.]
Crowned Hornbill *Tockus alboterminatus*. Very small numbers in forest at all levels, but probably only a visitor to Muretha and Manho (no permanent territory identified). A pair holding a territory in Ukalini.

Silvery-cheeked Hornbill *Bycanistes brevis*. Very small numbers: a pair flying up the Malema on 15 Nov. 2007; a single visiting Muretha on 21 Nov. and flying on towards Manho; one flying between Nanchili and Malema streams on 26 Nov. It is likely the local forest flora is too poor in large fruits for this species to breed. (It could have done so when mid-altitude forest was more extensive). None seen by Vincent (1933-36) in Jul.-Aug.; this species is subject to at least local movements or migrations. None seen by R. Demey, Melo *et al.*, nor Ryan *et al.*, except (the latter) in the forest directly above Gurue (1400 m). It would be interesting to investigate the floristic composition of the latter.

White-eared Barbet *Stactolaema leucotis*. Eastern endemic. A group of 3 in Malema riparian forest (15 Nov. 2007). Several in the lower section of Ukalini forest (up to 1650 m), feeding frequently on *Aphloia* fruits and also on *Macaranga*. One pair was feeding nestlings in a hole in a dead tree there at a height of 12 m. Likely widespread in mid-altitude forest, in small numbers. Only R. Demey observed this bird on earlier trips, up to 8 on the Malema river, but there is no reason to think it is a recent arrival.

Green Barbet *Stactolaema olivacea*. Eastern endemic. This barbet occurs in a series of isolates in low, mid-altitude or lower Afromontane forest on the eastern side of Africa. The Namuli population belongs to the race *belcheri*, shared with Thyolo Mtn in adjacent Malawi, and this is probably the race of the population recently found on Mabu Mountain (Spottiswoode *et al.* 2008). As the forest on Thyolo has in recent years been totally destroyed, Namuli has acquired added importance in the conservation of this race, which can be considered as Endangered.

In Malawi and some other forests (e.g. Ngoye in Natal), this barbet is associated with an abundance of large-fruited strangling figs at medium altitudes (Dowsett-Lemaire 1988b, 1989b). On Namuli Mountain none of the forest left today represents optimal habitat, but there is plenty of evidence that mid-altitude forest was more extensive in the past, and with the presence of strangling figs, would have represented attractive habitat for this barbet. On this survey, Green Barbets were found in very scattered territories in Manho, with only 4 occupied territories along the "circuit route". The first two territories (above and just below the entrance) were at least 700 m apart, and the next two were even further apart, in separate gullies on either side of a high ridge. As the birds were calling frequently and always in the same area in 5 successive days, it is likely that these represented the only defended territories in the area. Thus the total population in Manho is very small, perhaps some 20 pairs. In Ukalini saddle the density is higher, comparable to that on Thyolo Mtn in the past (perhaps as many as 1-2 pairs in 10 ha). But given the small size of the forest, the total number of pairs on Namuli today within the study area is 30-40 pairs at the most. This small population appears viable, as most of the mid-altitude forest had already disappeared by the time the aerial photos were taken in 1969. It is conceivable that the barbet occurs elsewhere on the plateau, as in the mid-altitude forest left on the other side of the big Malema dambo to the south-east of the mountain.

Seen feeding on *Aphloia* fruit in Ukalini. Vincent (1933-36) collected 8 specimens, from "primeval forest", without giving an altitudinal range; the labels indicate these were obtained between 1400 and 1770 m, with four below 1500 m (K. Cook *in litt.*). Ryan *et al.* (1999a) observed the species in a patch above Gurue on the drier side of the mountain at c. 1300 m. In any case, this suggests that the barbet could occur elsewhere in the vicinity, and every effort should be made to locate other populations.

Eastern Green Tinkerbird *Pogoniulus simplex*. Eastern endemic (from coastal Kenya south). A mistletoe specialist with a very small population on Namuli, discovered on this survey. One bird was heard several times in Manho on the edge of grassy clearings at the altitude of 1720 m (near 15°23'51"S, 37°02'13"E). It covered a large territory of well over 10 ha. A pre-recorded tape (my own from Mangochi Mtn in Malawi, published in Gibbon 1991) was used to attract the bird into view on 18 Nov. 2007, and it was tape recorded. Another one was heard in *Parinari-Syzygium cordatum* forest on the slopes above the Nanchili stream (c. 1300 m), on 27 Nov. There is only one previous record from Mozambique, in coastal forest in the south (a specimen in Inhambane District, 2434C1, Clancey 1971, 1996, repeated in Parker 1999). Parker (1999, 2005) did not find it anywhere in the south or centre, but it must certainly be more widespread (on the other hand the map in Fry *et al.* 1988 that shows it all over Mozambique is wrong). The nearest population at present is on Mangochi Mtn and Namizimu Hills in south-east Malawi, which is also the western limit of range (Dowsett-Lemaire & Dowsett 2006). The area has a rich mistletoe flora and the bird is very common there, and no doubt must occur in similar forest patches or thicket on the Mozambique side of the border. There is a green tinkerbird on Chipirone Mountain (Benson 1950, noted by Jali Makawa, but not collected), i.e. one of two species, this one or Moustached Green *P. leucomystax*. The two green tinkerbirds are allopatric and Moustached Green is an Afromontane endemic that reaches Mount Mulanje in very small numbers, at the southern limit of its range (Dowsett-Lemaire 1989b). Clearly the forest on Chipirone needs more exploration.

Yellow-fronted Tinkerbird *Pogoniulus chrysoconus*. A woodland bird, heard in *Syzygium cordatum* woodland near the Nanchili stream (1250-1300 m).

Golden-rumped Tinkerbird *Pogoniulus bilineatus*. Very common in all forest types from low altitude to Manho. Rather uncommon in small patches on Muretha, and apparently only as a visitor. Does not specialize on mistletoes, unlike the green tinkerbirds, but was seen prospecting mistletoe fruit in *Parinari* on the Nanchili stream.

[Green-backed Honeyguide *Prodotiscus zambesiae*. Three males collected by Vincent (1933-36) on the edge of "high mountain forest". A white-eye nest parasite.]

[Brown-backed Honeyguide *Prodotiscus regulus*. Recorded by Ryan *et al.* (1999a) from c. 1250 m. Normally a spe-

- cies of dry woodland, rather unexpected on the wet side of a mountain.]
- [Scaly-throated Honeyguide *Indicator variegatus*. Two females collected by Vincent on 2 & 3 Aug. at c. 1400 m were about to lay. Recorded by Ryan *et al.* (1999b) from Ukalini. A woodpecker nest parasite.]
- Lesser Honeyguide *Indicator minor*. One seen flying into forest on the Malema. A barbet nest parasite. Collected by Vincent at c. 1400 m.
- Golden-tailed Woodpecker *Campethera abingoni*. At least two territories occupied in Ukalini saddle, inside forest. Also recorded lower down on the Nanchili (Ryan *et al.* 1999a).
- Cardinal Woodpecker *Dendropicos fuscescens*. A few at forest edges and in *Syzygium cordatum* near the Nanchili stream, 1250-1350 m. Vincent (1933-36) collected a female in full breeding condition on 29 Jul., and recorded the species up to 1550 m.
- [African Broadbill *Smithornis capensis*. Recorded in riparian forest on the Malema and Nanchili — Ryan *et al.* 1999a, R. Demey.]
- Black Saw-wing *Psalidoprocne pristoptera*. Common at forest edges at all altitudes, in small numbers.
- Eurasian Sand Martin *Riparia riparia*. Palaearctic migrant. One in a large concentration of swifts and swallows on 17 Nov. 2007. One record by Ryan *et al.*
- African Sand Martin *Riparia paludicola*. One flying low over peaty meadow, Muretha (1850 m) on 16 Nov., can be no more than a wanderer this high.
- Lesser Striped Swallow *Hirundo abyssinica*. A few pairs around small rock faces at 1300-1400 m. Not recorded any higher.
- Red-rumped Swallow *Hirundo daurica*. Singles or pairs seen regularly over Muretha, Manho, and around some rock faces, sometimes mixing with flocks of African Black Swifts and House Martins. Also at lower levels (a family of 4, chattering together, 26 Nov at 1350 m). Ryan *et al.* (1999b) found them breeding on a rock face in the grassland below Namuli peak, the first record for Mozambique. Given the number of suitable granitic mountains in the area, the species ought to be widespread in this part of Mozambique.
- African Rock Martin *Hirundo fuligula*. The odd pair feeding along rock faces, 1400-1950 m.
- Eurasian Swallow *Hirundo rustica*. Palaearctic migrant. A few occasionally passing through at any levels (1200-1900 m), but not recorded daily.
- Eurasian House Martin *Delichon urbicum*. Palaearctic migrant. Wintering in large numbers (hundreds) in the area, usually associating with African Black Swifts, over Manho, Muretha, Namuli and Ukalini cliffs etc.
- Long-tailed Wagtail *Motacilla clara*. Territorial pairs on rocky streams, penetrating inside forest (Ukalini, Manho), 1200-1700 m.
- Richard's Pipit *Anthus richardi* (syn. African, Grassveld or Grassland Pipit *A. cinnamomeus*). On ridges with relatively short grassland, from 1400 to 1900 m. Frequent aerial displays.
- Tree Pipit *Anthus trivialis*. Palaearctic migrant. One passing through, Muretha, 22 Nov. 2007.
- Striped Pipit *Anthus lineiventris*. Associated with rocks with some woodland (*Syzygium*, *Iboza*), at all levels (at least 1300-1840 m).
- Black Cuckoo-shrike *Campephaga flava*. Common in mid-altitude riparian forest, *Syzygium cordatum* forest, reaching its upper altitudinal limit at 1580 m at the lower edge of Ukalini. Several pairs chasing each other near the Nanchili bridge, probably as a result of very recent deforestation.
- Eastern Mountain Greenbul *Andropadus nigriceps*. Afromontane endemic, confined to the highest mountains (in southern Malawi, only on Zomba/Malosa and Mulanje). Common in small forest patches on Muretha, with single pairs occupying patches of 1 to 1.5 ha. Appears to be in competition with Striped-cheeked Greenbul, as these patches contain in fact one pair of each *Andropadus*. Males of both occupy different song posts, and seem to indulge in counter-singing and to "control" different sections of these small patches (although they can be found at times feeding in the same fruit tree). On the Nyika Plateau and elsewhere in Malawi where Stripe-cheeked Greenbul is absent, the numbers of Mountain Greenbul are twice as high (Dowsett-Lemaire 1989b). Absent from the interior of Manho Forest, being confined to edges at high altitude (1800-1900 m). Not recorded at all lower down, including Ukalini (despite listening for its distinctive song, and watching fruiting trees for hours). Overall, the population of this species on Namuli must be quite low, with not much of a surplus even in optimal habitat. Proof of this comes from the fact that Katrina Cook's nets on Muretha caught only one *A. nigriceps* in 9 days against at least 9 *A. milanjensis*.
- Vincent (1933-36) also remarked that he found this bulbul more numerous on Mulanje than on Namuli, and that Stripe-cheeked was much commoner here, whereas Mountain Greenbul was partial to the small patches on the plateau. He collected only 5 *A. nigriceps* as against 21 *milanjensis*, apparently down to 1400 m: if correct, this probably means that some were altitudinal migrants (as is the case in southern Malawi in the winter months). On the other hand, Ryan *et al.*'s (1999a) listing of this bulbul at low altitudes in the summer months of Nov.-Dec. is likely due to confusion with Stripe-cheeked, or a typing error in their table.
- Stripe-cheeked Greenbul *Andropadus milanjensis*. Afromontane endemic. The most numerous member of the genus on Namuli, present not only on Muretha (see above), but also throughout montane and mid-altitude forest, down to 1250 m. Often seen taking fruit (*Aphloia*, *Macaranga*, *Rutidea*, *Schefflera*). Competes with Mountain Greenbul on Muretha (see above), where individual pairs occupy patches of 1 to 1.5 ha, but the number of wandering birds is higher than in its congener.
- Little Greenbul *Andropadus virens*. Understorey species common in mid-altitude forest, reaching the lower levels of Ukalini (several up to 1650 m).
- Cabanis's Bulbul *Phyllastrephus cabanisi* (race *placidus*, sometimes treated as a separate species, but voice identical, and *placidus* reacts very well to tape playback of *cabanisi* songs: Dowsett-Lemaire 1989b: 78). Afromontane

near-endemic. Widespread in the ground stratum of forest, normally in dense undergrowth in deep shade. At all levels, from 1200-1870 m. Single pairs are present in some patches on Muretha (1 to 1.5 ha), in thickets of *Mimulopsis* and small saplings.

Yellow-streaked Bulbul *Phyllastrephus flavostriatus*. A mid-stratum species, widespread from at least 1250 m to 1820 m. Absent from small patches on Muretha.

Black-eyed Bulbul *Pycnonotus barbatus*. Common in riparian forest, woodland and bush in farmland at low levels, up to Ukalini (forest edges), but absent from the Manho area and from the Muretha Plateau, except as an occasional wanderer. R. Demey found a few on Muretha in May.

Olive Thrush *Turdus olivaceus*. Afromontane near-endemic. Very localized on Namuli, being confined to fragmented forest on the Muretha Plateau, where a few pairs were found to occupy some of the small patches. One territory of a male observed over several days consisted of two patches totalling just under 3 ha. This male (which appeared unmated) sang at all hours of the day, song motifs including occasional imitations of the “prui-prui” of Namuli Apalis and “kuwa-kuwa” of Red-chested Flufftail! A neighbouring male also imitated the apalis. Vincent (1933-36) collected only one specimen (female).

Spotted Ground Thrush *Zoothera guttata*. **Endangered**. Sub-Afromontane endemic (the few breeding localities known being in mid-altitude forest, or temperate forest in the Eastern Cape). Only recently discovered in Mozambique, with a couple of records of “wintering” birds on the coast near Maputo in Nov. 1999 and Apr. 2002 (Parker 2005: 310). In south-east Malawi, occurs in very small numbers on four different mountains (three of which have been largely or totally deforested in recent years) and appears to be resident, with some altitudinal movements in winter (down Mount Mulanje): Dowsett-Lemaire & Dowsett (2006). Discovered on Namuli on this survey, in part thanks to the local knowledge of hunters, who know this bird and also its distinctive short song. Two hunters met in Manho on 17 Nov. and at least one of our guides knew this bird well and described the song as a series of 3 detached whistles (which they produced without prompting). I heard and tape-recorded this song in Manho Forest, near the entrance at 1710 m, on 18 Nov. Only a few songs were produced (I taped three) and it was not heard again. The guides later confirmed that the tape was indeed of the “bird with spots”. I saw one in Ukalini Forest on 26 Nov., at just over 1700 m, feeding on the ground near some rocks.

The difficulty in locating Spotted Ground Thrush comes mainly from the fact that it also has a longer, fluty song similar to that of its congener Orange Thrush, which is often sympatric (as here and in Malawi). A tape of the long song of Spotted Ground Thrush from Ngoye (Natal) that I played at Thyolo in the 1980s elicited responses only from Orange Thrush, and a tape of a similar fluty song produced by Spotted Ground Thrush on the edge of Thyolo in Dec. 2005 (obtained by Eric Herrmann), that I played in Manho and Ukalini also provoked an Orange Thrush into song. The Orange Thrush at Ukalini was teased with this half a dozen times, and each time reacted very strongly. My recording of the much simpler 3-note song might be more effective, but it was taken from far away and is not loud enough for playback. Orange Thrush appears to be very common and interspecific competition may also keep numbers of Spotted Ground Thrush low.

The Spotted Ground Thrush taped by E. Herrmann at Thyolo also gave a descending whistle, repeated at intervals, either in isolation or as an introduction to song phrases. This whistle sounds rather similar to one of the main calls of Cholo Alethe. Playback of this call in Manho and Ukalini provoked reactions only from Cholo Alethes!

Orange Thrush *Zoothera gurneyi*. Afromontane endemic. Very common in montane forest, in Manho and Ukalini, even in some of the patches on Muretha; alt. 1580-1900 m.

Cholo Alethe *Alethe choloensis*. **Endangered**. Afromontane endemic. An ant-following specialist, endemic to mid-altitude and lower montane forest in south-east Malawi and adjacent Mozambique. This is perhaps a distinct race (*namuli*), but as this species has recently been found in an intermediate area at Mabu (Spottiswoode *et al.* 2008) and is likely to be on other mountains between Mabu and Namuli, it is difficult to see where the limits of any form might be; any variation is likely to be clinal. Very unevenly distributed on Namuli; it must have been common in the past in mid-altitude forest at 1200-1400 m, where still found today (one calling on the Malema, two or more in strips on the Nanchili stream), but the habitat is almost gone. Reasonably common in Ukalini Forest (1600-1750 m), reaching densities close to the optimum of perhaps 2 pairs/10 ha. There was much ant activity, there and 2-3 pairs of alethes were gathering around ant swarms; there was also much counter-singing between neighbouring birds.

The situation is very different in the cooler Manho Forest: only three pairs were located along c. 1.5 km of trails on the “circuit route”, and these birds were relocated on every walk and evidently breeding (much alarm-calling from both adults as soon as I entered the territory). Ants must have been far more local in Manho, as I did not come across any swarms on my visits, and this is to be expected in higher-altitude or cooler forest. On Muretha, two patches (one measured 1.5 ha) were each occupied by one bird, calling briefly (but daily) in the early morning. These birds appeared unmated and did not give any alarm-calls. (The closely-related White-chested Alethes *A. fuelleborni* can refrain from breeding for years until an ant colony moves into the territory: Dowsett-Lemaire 1983, 1989b). Thus the overall number of Alethes in the study area is probably of the order of a few dozen pairs. However, there is no reason to think that the species is not also present on other forested mountains and hills around Namuli.

Ryan *et al.* wrote that Cholo Alethes near camp 2 (Nanchili bridge) occasionally fed in “dense *Brachystegia* woodland outside of forest”. There is no such woodland in the area, and it is assumed they meant evergreen *Syzygium cordatum* formations, which have a closed canopy, immediately next to *Newtonia/Pari-nari* forest on the Nanchili. Cholo Alethes are not known to enter woodland of any kind.

- Starred Robin *Pogonocichla stellata*. Afromontane endemic. Very common in montane forest (Manho, Ukalini), including in small patches on Muretha. Territory size of 1 ha or a little less in small patches (1 pair in 1 ha, 2 pairs in 2 patches of 1.4 and 1.5 ha respectively).
- Olive-flanked Robin *Cossypha anomala*. Afromontane endemic. Belongs to the nominate race (*gurue* is a synonym), confined to Namuli and adjacent Chiperone and Mulanje Mountains. Very common in montane forest (1600-1900 m), in dense understorey, including most (but not all) small patches of 1 ha or more on Muretha, still only one pair in patches of 1.4 and 1.5 ha. One of the noisiest forest species.
- Cape Robin *Cossypha caffra*. Afromontane near-endemic. Very common in bracken scrub and at edges of forest, from c. 1400 to at least 1900 m, and likely to reach the upper limits of scrub forest higher up. Although Ryan *et al.* (1999a) ticked it for all altitudes, I don't think it can be regular below this, except in the winter months (R. Demey at 1250 m near the Malema bridge in June 2007).
- Red-capped Robin *Cossypha natalensis*. Found in riparian forest on the Nanchili at 1200 m. Unlikely to occur any higher on the wet side of the mountain. This bird imitated Eurasian Bee-eater and Lizard Buzzard in its song.
- Stonechat *Saxicola torquatus*. Common in patches of bracken next to open grassland, and rank grass near streams with scattered bushes. On plateau and lower slopes, 1300-1900 m.
- Broad-tailed Warbler *Schoenicola platyurus*. A few singing or alarm-calling in rank grass in peaty meadows on Muretha (up to 1880 m), and lower down in dense bracken with some grass.
- Evergreen Forest Warbler *Bradypterus lopezi*. Afromontane near-endemic. Very common in dense forest understorey, at medium and high altitudes (1200-1900 m), including small patches on Muretha. Also throughout well-developed bracken scrub with scattered trees or bushes. On Muretha some territories included small patches (down to 0.5 ha, but nearer 0.7 ha with adjacent bracken scrub); still only one pair in two patches of 1 and 1.4 ha, and one patch of 1.5 ha was not occupied (understorey not thick enough). In the absence of its congener *B. cinnamomeus* (see below), this species tends to expand its niche into secondary growth.
- African Moustached Warbler *Melocichla mentalis*. Widespread in low rank growth up to 1450 m.
- African Yellow Warbler *Chloropeta natalensis*. Common warbler in extensive patches of dense bracken, especially at 1250-1600 m (to the lower edges of Ukalini). Above that, only in well-developed secondary growth, locally to 1900 m (in *Iboza* with dense bracken).
- [Red-faced Crombec *Sylvietta whytii*. A woodland species, recorded in mixed species flocks at forest edges or woodland at low altitudes (Ryan *et al.*, R. Demey).]
- Willow Warbler *Phylloscopus trochilus*. Palaearctic migrant. The commonest Eurasian warbler, widespread at all levels, in forest, tall shrubland and woodland. Some in song.
- Yellow-throated Warbler *Phylloscopus ruficapilla*. Afromontane endemic. Uncommon in canopy and mid-stratum of montane forest (Manho and Ukalini). Singing very little and perhaps under-recorded (possibly breeding largely over, one family with dependent fledglings).
- Garden Warbler *Sylvia borin*. Palaearctic migrant. A few in forest at medium altitudes (on the Nanchili, 1250-1300 m) and one singing higher, in a *Maesa* thicket, c. 1550 m (24 Nov. 2007). Melo *et al.* had some on Muretha in early Dec. This species is very fond of small fruit, and it is likely that some would move to Muretha when *Myrica* is fully ripe (as should be the case in Dec.). *Myrica* is a favourite fruit on the Nyika (pers. obs.), see also Dowsett-Lemaire (1988b).
- [Blackcap *Sylvia atricapilla*. Palaearctic migrant near the southern limit of its wintering range. Only one record (the first for Mozambique) from the Muretha Plateau by Melo *et al.* (2006), 5-6 Dec. 2001. One bird (adult male) was mist-netted and a few others were present. Possibly not of annual occurrence this far south, this is another warbler that is largely frugivorous in its winter quarters, fond of *Myrica* and other small fruit (Dowsett-Lemaire 1988b).]
- Croaking Cisticola *Cisticola natalensis*. One heard at c. 1300 m, in open woodland with rank grass. Normally found in dambos, and could be common in the big Malema dambo to the south.
- Wailing Cisticola *Cisticola lais*. Afromontane endemic. Very common in montane grassland, from about 1400 m to 1900 m. Noted by Vincent (1933-36) up to 2000 m, and likely higher. Builds its nests in tufts of grass near the ground, but on Muretha often feeding in low trees on the edge of forest.
- Red-faced Cisticola *Cisticola erythrops*. In rank grass and bracken near streams, up to about 1250 m (Malema).
- Singing Cisticola *Cisticola cantans*. The common cisticola of dense bracken or shrubland, especially at 1200-1600 m. Becomes more local higher, up to the lip of Muretha Plateau (1860 m).
- Tawny-flanked Prinia *Prinia subflava*. Fairly common in grass and bracken scrub up to c. 1500 m.
- Red-winged Warbler *Heliolais erythropterus*. Fairly common in grass and bracken scrub, up to c. 1400 m.
- Yellow-breasted Apalis *Apalis flavida*. In riparian forest in the foothills, up to c. 1300 m (Malema, Nanchili).
- White-winged Apalis *Apalis chariessa*. **Vulnerable**. Eastern endemic. Since the nominate race (Tana River, Kenya) became extinct (last seen in 1961), this rare species is confined to the forests of central Tanzania (Ulugurus, Udzungwas), south-eastern Malawi and adjacent Mozambique (Chiperone Mtn). The gap between Chiperone and Tanzania is marginally filled by its discovery on Namuli, but the population on Namuli must be considered as highly endangered. This is not a bird of montane forest, but mainly of mid-altitude forest dominated by Mimosaceae (*Albizia* or *Newtonia*). In Malawi, it is commonest on the edges of forest, or in riparian strips, avoiding primary forest of any great size. It is very rare on Mulanje (perhaps too wet), with a couple of records on the southern slopes at 1000 and 1300 m (pers. obs., Dowsett-Lemaire & Dowsett 2006).
- One male was seen in riparian forest on the Nanchili at 1200 m, in a small mixed party, 27 Nov. 2007, just before I had to leave to return to camp. A pre-recorded tape of the species's song (a highly synchronised duet of 4 notes, two by the male, two by the female) was tried in various places. The Black-headed Apalis

always reacted to it (even in Manho), and there may well be competition between the two canopy apalises. Most surprisingly, at least two of the hunters interviewed knew this apalis, but when they claimed that it was widespread in Manho, this seemed to be based on confusion of the piping voice with that of Black-headed Apalis (similar in timbre, but with different motifs). One of the hunters also knew Yellow-breasted Apalis; in fact, he knew all 4 spp. present, and pointed at the right place on the plates without hesitation, despite the presence of other similar-looking apalises in the Sinclair guide which covers the whole of Africa.

This apalis is evidently very rare on the wet side of Namuli, and should be searched for on the drier side, especially in any riparian strips with *Albizia adianthifolia* or *Newtonia*.

Namuli Apalis *Apalis (thoracica) lynesi*. **Vulnerable**. Afromontane endemic, this form being confined to Namuli. Named by Vincent (1933, *Bull. Brit. Orn. Club* 53: 142) who collected 12 specimens. Its nearest relative is the yellow-bellied race of Bar-throated Apalis (*A. t. flavigularis*), which is found on Mulanje and Zomba-Malosa Mts in adjacent Malawi. Very common in forest and tall shrubland from 1270-1300 m to at least 1900 m (and likely reaching the upper limit of scrub forest). Inhabits even single lines of trees on streams, and the smaller patches on Muretha, but individual territories cover at least 0.5-0.6 ha (forest plus some bracken scrub), and in patches of 1 to 1.5 ha there is still only one pair. Territorial limits were confirmed in three patches of 1.0, 1.4 and 1.5 ha (all with one pair), using tape playback of a pre-recorded tape from the Nyika Plateau (race *A. t. youngi*). In the race *youngi*, the voice of the male sounds identical, whereas the female gives a slower series of high-pitched notes. The female of Namuli Apalis gives a fast "tittitititi", similar to that in *A. t. flavigularis* of Mulanje. In any case, pairs of Namuli Apalises reacted very well to tape playback from the Nyika, coming to within 1-2 m of the recorder in the forest understorey, bill snapping and wing-clapping.

Densities in continuous forest are likely to be around 5 pairs/10 ha, and the overall population in the study area (in 1200-1400 ha of forest) must be at least 6-700 pairs, and probably more as narrow riparian strips and scrub forest are not really included in this calculation.

Black-headed Apalis *Apalis melanocephala*. Eastern endemic. Very common in forest canopy at all altitudes, from 1200 m (and likely lower) to 1900 m. Pairs occupy small patches on Muretha, with territories of 1-1.5 ha. Also in patches of *Syzygium cordatum* forest at 1200 m. Readily reacts to tape playback of the song of White-winged Apalis (see above) and perhaps competing with it.

Bleating Bush Warbler *Camaroptera brachyura*. Common in forest understorey at low altitude, up to c. 1400 m.

[Southern Black Flycatcher *Melaenornis pammelaina*. One record only, by R. Demey, of one in old cultivation with scattered trees, below the Malema bridge.]

[Spotted Flycatcher *Muscicapa striata*. Palaearctic migrant, recorded at low altitude by Ryan *et al.*]

Dusky Flycatcher *Muscicapa adusta*. The odd pair in riparian forest, from 1250 m to c. 1550 m, just below Ukalini.

[Ashy Flycatcher *Muscicapa caerulescens*. A species of riparian forest recorded by Ryan *et al.* at c. 1250 m.]

Lead-coloured Flycatcher *Myioparus plumbeus*. One singing in open, secondary forest (*Syzygium cordatum*-*Trema* etc.) on a slope at 1400 m on the Ukalini path. No previous record.

Cape Batis *Batis capensis*. Afromontane near-endemic. Common in forest, from 1300 m (marginally 1270 m) to the top. On Muretha one pair in a round patch of 1 ha, but 2 pairs present in two patches of 1.4 and 1.5 ha respectively (comparable to densities on the Nyika Plateau, Dowsett-Lemaire 1983). Vincent found them common from 1370 m (as low as he went).

Mozambique Batis *Batis soror*. A few pairs at 1200-1300 m, in *Syzygium cordatum* woodland, and at forest edges.

Black-throated Wattle-eye *Platysteira peltata*. A few pairs in riparian forest at 1200-1300 m.

White-tailed Crested Flycatcher *Elminia albonotata*. Afromontane endemic. Common species of forest understorey, from 1250 m (Malema) to the top. On Muretha, single pairs occupy patches of 1 to 1.5 ha.

African Paradise Flycatcher *Terpsiphone viridis*. Pairs in riparian forest at 1200-1300 m and possibly a little higher. Also in *Syzygium* woodland or forest.

Dapple-throat *Modulatrix orostruthus*. **Vulnerable**. Afromontane endemic, the nominate race being confined to Namuli. The underparts are much less clearly dappled than in the Tanzanian races (*amani*, *sanjei*), whose populations are respectively in the East Usambaras (rare) and Udzungwas (common): Keith *et al.* (1992). Confined to montane forest above 1500 or 1600 m, up to 1870 m. Common in Manho and Ukalini; rather marginal in fragmented forest on Muretha (one pair occupying two contiguous patches of closed forest totalling 2.5 ha). Feeds on the ground, hopping and turning leaves like a thrush (and also like some of the Illadopses of West Africa). Sings low down, on small saplings, fallen logs or just a bump on the ground. The scientific literature contains nothing on how this bird feeds or behaves (Keith *et al.* 1992), yet it is less difficult to watch than Spot-throat *M. stictigula*, as the latter prefers impenetrable thickets (such as clumps of Acanthaceae in the Misuku Hills). The alarm-call is a striking modulated whistle, also given with songs by birds counter-singing with neighbours. Individuals have at least 2-3 song types; the Tanzanian populations produce slightly different motifs (as on a tape from the Udzungwas, provided by Clide Carter), as is to be expected of distant populations. The timbre and style of song are reminiscent of the melodious song of another montane babbler, the Grey-chested Illadopsis *Kakamega poliothorax*. The voice of Spot-throat is more varied, but also loud and melodious. The vocalizations of both *Modulatrix* remain unpublished commercially.

Does not occupy the whole forest as it is partial to areas with high densities of saplings under fairly closed canopy; seems to avoid *Mimulopsis* thickets (unlike Spot-throat *M. stictigula* elsewhere) and is thus more readily observed than its congener. Densities in the large forest blocks (1000 ha) could be of the order of 300 to 500 pairs, based on an estimate of 3-5 pairs/10 ha.

Vincent (1933-36) collected a single male at an altitude of "4800 feet" (1464 m). There is no forest

of any size today at that altitude that might be suitable for this species; Vincent failed to find any more, but at this low level, he might have come across an altitudinal wanderer. New to science when he collected it in 1932, the first Tanzanian specimen was obtained by Moreau's collector two years later (Sclater & Moreau 1935). Originally placed in the bulbul genus *Phyllastrephus*, but Vincent's assistant told him one day that he saw this bird produce a modulated whistle quite unlike that of bulbuls and reminding him rather of a robin, and he was quite right!

Rufous-bellied Tit *Parus pallidiventris*. Zambeziian near-endemic. Occurs in *Syzygium cordatum* woodland near the Nanchili. Vincent (1933-36) did not collect any, but saw some in park-like clearings at 1400 m.

Violet-backed Sunbird *Anthreptes longuemarei*. A few seen on flowers of *Syzygium cordatum* and *Eucalyptus* near the Nanchili bridge.

Collared Sunbird *Anthreptes collaris*. Common in riparian forest at 1200-1300 m.

Olive Sunbird *Nectarinia olivacea*. Common in riparian forest at medium altitude and in Ukalini, slightly less common in Manho, rare on Muretha (but at least one male singing in a patch of c. 1 ha, and 1-2 wanderers elsewhere). Unlikely to occur above 1870 m. On pink flowers of Loranthaceae, but largely insectivorous.

Miombo Double-collared Sunbird *Nectarinia manoensis*. Zambeziian endemic. A few birds at medium altitudes (up to 1400 m), on flowers of *Syzygium cordatum*, *Protea welwitschii*. The complete absence of sunbirds in shrubland at higher levels may seem surprising, but is no doubt due to the floristic poverty of this habitat, with hardly any sunbird-favoured flowers (*Tecomaria* is too rare, and the only *Leonotis* seen were shrivelled). Vincent (1933-36) saw some a bit higher, up to c. 1600 m. On Mulanje this species is common on the high plateaux up to 2130 m.

Eastern Double-collared Sunbird *Nectarinia mediocris*. Afromontane endemic. Normally a very common bird in montane forest, but uncommon in Manho (pairs in widely separated territories, 500 m or more apart), and on Muretha (one or two wanderers, no song). Less uncommon in Ukalini. Seen on flowers of *Syzygium cordatum*, *Albizia gummifera*, and of blue *Streptocarpus* on a low rock. In July 1932 Vincent (1933-36) found them all in "full breeding activity", which also coincides with the peak of breeding activity in Malawi (Dowsett-Lemaire & Dowsett 2006). Definitely not recorded from lower levels in November, but R. Demey had some on the Malema river in June, the result of altitudinal movements in the cold months.

Yellow-bellied Sunbird *Nectarinia venusta*. On *Erythrina*, *Syzygium* etc. at medium altitudes (1200-1400 m). In late July Vincent (1933-36) saw it much higher, up to perhaps 1800 m, in bracken with wild flowers.

Yellow White-eye *Zosterops senegalensis*. Common species in any forest, secondary formations and tall shrubland, up to at least 1900 m.

Southern Puffback *Dryoscopus cubla*. Common in *Syzygium* woodland and mid-altitude forest. In montane forest only in Ukalini (up to at least 1750 m), but absent from cooler Manho and of course Muretha.

Marsh Tchagra *Tchagra minutus*. Elusive species heard in dense bracken scrub (song, alarm-calls), in three places, from 1300 m to (once) 1850 m.

Brown-headed Tchagra *Tchagra australis*. In dense bracken scrub and *Syzygium cordatum* woodland at 1200-1400 m. Tropical Boubou *Laniarius aethiopicus*. Fairly common in dense bracken scrub and at forest edges from low altitude to 1800 or (locally) 1870 m.

Many-coloured (Black-fronted) Bush Shrike *Malaconotus multicolor*. Common in forest canopy and mid-stratum, from low levels (1200 m) to 1820 m, in Manho and Ukalini. Absent from fragmented forest, i.e. Muretha patches. Vincent (1933-36) collected as many as 11 specimens, two of which were of the melanistic morph.

[Orange-breasted Bush Shrike *Malaconotus sulfuropectus*. Normally a species of dry riparian forest or woodland: one recorded by R. Demey from disturbed habitat with overgrown cultivation and scattered trees, below Malema bridge (at c. 1200 m, R. Demey pers. comm.). Also listed by Ryan *et al.* for low altitudes. Normally separated from *M. multicolor*, and likely to be no more than very marginal in the area.]

[Grey-headed Bush Shrike *Malaconotus blanchoti*. Vincent (1933-36) collected one female in forest at 1430 m, and considered it as "no doubt a straggler from the woodland below". A comment with which I would agree.]

Square-tailed Drongo *Dicrurus ludwigii*. Common in riparian forest at medium altitudes, with strong disputes between displaced pairs following recent deforestation around the Nanchili bridge. Less common but widespread in Manho and Ukalini Forests, up to 1750 m, especially under closed canopy.

White-necked Raven *Corvus albicollis*. Common on the mountain at all levels, around rocky hills. Up to 12 birds eating *Myrica* fruit on the edge of the Muretha Plateau on 21-22 Nov. 2007, some flying off with small broken branches (with fruit).

African Red-winged Starling *Onychognathus morio*. Common around rocky formations, usually in pairs; nests in rocky cracks. Often feeds in canopy of nearby forest, on insects or fruit (e.g. *Aphloia*).

[Amethyst Starling *Cinnyricinclus leucogaster*. The only records are by Ryan *et al.*, who found some at lower levels, c. 1250 m or lower. An intra-African migrant that may breed some years in montane or mid-altitude forest and adjacent woodland, depending on the amount of fruit, but usually avoids the wetter side of mountains.]

Bertram's Weaver *Ploceus bertrandi*. Afromontane endemic. Uncommon: one pair in riparian forest near the Nanchili bridge; one pair in secondary growth among scattered trees below the lip of Ukalini Forest, at 1580 m. A nest from the previous year was clearly visible, hanging down the tip of a frond of tree fern *Cyathea dregei* at a height of 2.5 m. Noted by R. Demey and Melo *et al.* but not by Ryan *et al.*

Spectacled Weaver *Ploceus ocularis*. At forest edges and in shrubland at medium levels, 1200-1400 m.

Dark-backed (Forest) Weaver *Ploceus bicolor*. Common in riparian forest and higher in the larger blocks of montane forest (Manho and Ukalini), up to 1800 m.

Black-winged Bishop *Euplectes hordeaceus*. Several small flocks (non-breeding dress), Malema area, 14-15 Nov. 2007.

- Red-collared Whydah *Euplectes ardens*. A male turning into breeding dress in a wet peaty meadow, 1880 m, 22 Nov. 2007. Likely to breed in this habitat, but no previous records.
- Red-faced Crimsonwing *Cryptospiza reichenovii*. Afromontane endemic. Very discreet species of forest understorey, locally encountered in pairs: Muretha Plateau, Manho, riparian forest lower down; overall 1250-1870 m. [Lesser Seedcracker *Pyrenestes minor*. Eastern endemic. One record of this very discreet bird by R. Demey, of a pair in secondary growth below the Malema bridge, 4 June 2007.]
- Blue-billed Firefinch *Lagonosticta rubricata*. A few pairs in dense bracken scrub and at forest edges, 1200-1600 m, possibly higher.
- Sweet Waxbill *Estrilda melanotis*. Afromontane near-endemic. A few pairs at medium altitudes, in shrubland, near rocks and at forest edges, up to 1400 or 1500 m.
- Common Waxbill *Estrilda astrild*. Common in peaty meadows on Muretha, in pairs or small groups, feeding on grass seeds; also lower down in grassland.
- Red-backed Mannikin *Spermestes bicolor*. Small flocks in bracken scrub at 1200-1350 m.
- Pin-tailed Widow *Vidua macroura*. A male displaying in short grassland on ridge at 1350 m, 26-27 Nov. 2007 (also seen lower down). Was nearly in full dress; birds seen in June 2007 (R. Demey) were still in full dress. [Indigobird *Vidua* sp. R. Demey saw one in breeding dress near the Malema bridge on 3 June 2007. The only likely species is Variable Indigobird *V. funerea*, as the only firefinch present (which it parasitizes) is *L. rubricata*. Breeding dress is assumed mainly from Feb.-June in Malawi.]
- African Citril *Serinus citrinelloides*. Afromontane near-endemic. A few at forest edges and in secondary growth with scattered trees, medium elevations up to 1580 m (lower edge of Ukalini).
- [Bully Canary *Serinus sulphuratus*. One record of 1-2 pairs by R. Demey near the Malema bridge, in secondary growth.]
- Cabanis's Bunting *Emberiza cabanisi*. A few singing at forest edges, in *Syzygium cordatum* woodland and wooded grassland at medium elevations (1200-1400 m).

4.2. Breeding records.

Below are a series of records from November 2007, back-dated to month of egg-laying wherever possible.

- Rock Kestrel. Two fledglings fed mid-Nov. suggests egg-laying Aug. (or very early Sep.).
- Red-chested Cuckoo. Female calling on 15 and 23 Nov. (egg-laying Nov.). A female collected by K. Cook was about to lay (Nov.).
- Scarce Swift. Aerial mating 20 Nov.
- African Black Swift. Four pairs feeding nestlings 20 Nov., thus egg-laying Oct. Presence of many recently fledged young in flocks suggests much laying activity in Sep.-Oct.
- White-eared Barbet. Feeding noisy nestlings on 26 Nov., suggests egg-laying Oct.
- Olive Thrush. One collected by K. Cook had an active brood patch (and gonad activity showed it was preparing a replacement clutch, mid-Nov.).
- Cholo Alethe. Two females netted by K. Cook in Ukalini on 26 Nov. and examined by both of us had active brood patches (one rather fat, other had lost fat but was still watery, thus probably respectively on eggs and chicks): egg-laying both in Nov.
- Starred Robin. Many pairs were feeding nestlings or recently fledged young. At least 9 records were back-dated to month: 7 laying in Oct., 2 in Nov.
- Stonechat. The local pair at Muretha had full-grown, partly independent fledglings, having laid Sep.
- African Yellow Warbler. Pair feeding (at nest) 24 Nov., egg-laying Nov.
- Yellow-throated Warbler. Pair feeding two fledglings (Manho, 16-20 Nov.), thus egg-laying Oct.
- Wailing Cisticola. Two pairs feeding at nest (in grass tuft) mid- and late Nov. (egg-laying Oct. and Nov.). One feeding a full-grown fledgling 22 Nov. (eggs Sep./Oct.), and one nest-building 22 Nov.
- Singing Cisticola. Two different pairs feeding small fledglings, 16-23 Nov. (eggs Oct.).
- Namuli Apalis. One pair taking small prey to nest (in bush at forest edge) 23 Nov., eggs Oct. or Nov.
- Black-headed Apalis. Pair taking small prey to location in canopy (nest?) 25 Nov., eggs Oct. or Nov.
- Cape Batis. I did not see any young out of the nest, but many females begging and fed by males (sign of incubation of eggs or very small chicks) from mid- to late Nov.: egg-laying Oct. (1), Nov. (6).
- Mozambique Batis. Male feeding female, 15 and 27 Nov. (eggs Oct., Nov.).
- Black-throated Wattle-eye. Male feeding big fledgling, 26 Nov. (eggs prob. Sep.)
- White-tailed Crested Flycatcher. Several pairs feeding a fledgling at different stages of growth: eggs Sep. (3) and Oct. (3). Other pairs behaved as if with occupied nest.
- Brown-headed Tchagra. Nest-building 27 Nov.
- Red-winged Starling. Pair feeding at nest (rock crack), 20 Nov. (eggs Oct.); pair feeding noisy fledglings 24 Nov. (eggs Sep.).

There are some additional records from earlier workers:

- Scaly-throated Honeyguide. Two females preparing eggs in early Aug. (Vincent 1933-36)
- Cardinal Woodpecker: a female collected on 29 July was in "full breeding condition" (Vincent).

Black-headed Apalis. Some females were “in the act of laying” late Jul.-Aug. (Vincent).

Namuli Apalis. One female caught had a well-developed brood patch (late Nov. or early Dec., Ryan *et al.*); one nest under construction 29 Nov. (4 m high) was later abandoned.

Yellow-bellied Sunbird. Nest in bracken, with 2 young leaving it on 25 Jul. (Vincent), thus eggs in late June.

Dapple-throat. One of two birds netted in Ukalini sometime between 27 Nov.-4 Dec. had a brood patch, no further details; the other had commenced primary moult, suggesting it had completed breeding (Ryan *et al.*).

Melo *et al.* report active brood patches in five mist-netted females of four species (Eastern Mountain Greenbul, Namuli Apalis, Cape Batis and two White-eyes), all on 6 Dec. (eggs probably laid in Nov. for most of them).

4.3. Species to be deleted from previous lists or in need of confirmation.

Hottentot Teal *Anas hottentota*. Vincent (1933-36) flushed 3 ducks from a forest stream at 1550 m in the Ukusini (Ukalini) forest. He thought they were small enough to be this species, but other than size his short description agrees equally well with African Black Duck. As the habitat is abnormal for Hottentot Teal and that Black Ducks certainly occur, this record is best considered as unproven. It was listed without comment (based on Vincent) in a summary table by Ryan *et al.* (1999a).

African Hawk-Eagle *Hieraaetus spilogaster*. Listed by Vincent (1933-36) in a summary table (Ibis 1934, p. 159) for both Namuli and Cholo (Thyolo). But the species text does not have this species at all, and I suspect it was dropped through the lack of specimens. This bird is unlikely at both localities, being a bird of woodland rather than forest, absent from the wet slopes of forested mountains. If a hawk-eagle were to occur on Namuli, it would be far more likely the forest species Ayres's Hawk Eagle *H. ayresii*. It is indeed the latter which is or was recorded from Thyolo Forest (Dowsett-Lemaire & Dowsett 2006). Listed without comment by Ryan *et al.* (1999a), based on Vincent.

Red-tailed Flufftail *Sarothrura affinis*. Afromontane near-endemic. This was reported by Ryan *et al.* (1999a, 1999b), based on a bird seen in flight on Muretha Plateau. The observer (P. Ryan *in litt.*) agrees that this record is in need of confirmation. As this is a biome species, it appears also in the IBA account for Namuli (Parker 2001). Melo *et al.* (n.d.) mention a *Sarothrura affinis* with a question mark: this is based on a female flufftail flushed on Muretha Plateau, which they could not identify. The species “*S. affinis*” appears on their list because it was the only flufftail mentioned earlier (M. Melo pers. comm.).

The habitat of *S. affinis* in the Tropics is dry montane grassland, which is hardly available on Namuli. Were the Red-tailed Flufftail to occur, it should be singing spontaneously at this time of year, but I have not heard any. Repeated searches for the species (with the help of tape playback) met with complete failure, whereas Red-chested Flufftail was found to be common throughout the peaty meadows of Muretha Plateau. Although one cannot altogether dismiss the 1998 record, as it is conceivable that the species occurs very locally (it is present on Mt Mulanje, but there at least there is much suitable habitat), it would be wise to consider it as unproven so far, and the species should be deleted from the Afromontane biome list for Namuli. *S. affinis* is known from the montane grassland of the Chimanimani Mountains (Masterson & Child 1959), but it is not clear whether it has been recorded from the Mozambique side, and there is more grassland on the Zimbabwe side.

Purple-crested Turaco *Tauraco porphyreolophus*. Shown as occurring on the Nanchili (camp 2, 1250 m) in Ryan *et al.* (1999a: 327), but this is in error. The bird was seen at lower levels near Gurue town and not on Namuli (J. Graham and P. Ryan *in litt.*). Indeed this species is normally absent from mid-altitude forest occupied by Livingstone's Turacos.

Bearded Woodpecker *Thripias namaquus*. Vincent (1933-36) did not collect any, but thought he heard its call from the forest canopy at 1430 m. This is so unusual for this woodland species that the record is best dropped (moreover, the call described does not correspond to the typical calls of this woodpecker). No-one else who visited the area has found the species, and indeed the large woodland trees favoured by it are lacking. Listed without comment by Ryan *et al.* (1999a), based on Vincent.

Cinnamon Bracken Warbler *Bradypterus cinnamomeus*. Afromontane endemic (from Ethiopia to Malawi). This is a warbler of the bracken scrub, shrubland and forest edges of the highest mountains in eastern Africa, where it can be very common. It remains unknown from Mozambique (its inclusion in Dowsett 1993 is in error, being based on Vincent's uncertain observations), and the southern limits of range are reached in Malawi. South of the Nyika and North Viphya Plateaux there is an isolated, relict population on Mount Mulanje, which it ascends to 2840 m, near the summit (Dowsett-Lemaire & Dowsett 2006). R. Demey thought he might have heard it on Namuli. Aware of the possibility, I paid more than usual attention to the songs and calls of *Bradypterus* warblers on Namuli (it is difficult to see these birds and also to distinguish the two species on sight, especially in dark understorey). I must have listened to hundreds, probably thousands of songs and identified only *B. lopezi*. The latter has three main song types on Namuli (all tape-recorded on this visit), and the fastest could conceivably be confused with the fast trill of *B. cinnamomeus*. However, at all times, the songs of *B. cinnamomeus* can be identified by the presence of one to a few thin whistles preceding the trill (absent in *B. lopezi*), and by the fact that the main song is given without a crescendo (present in *B. lopezi*). The contact or alarm calls also differ, those of *B. lopezi* being one or a few hard “thac”, those of *B. cinnamomeus* a soft rolled purr or “trrr”. Again, all the *Bradypterus* I came across, including in shrubland, were alarm-calling like *B. lopezi*. Indeed, the fact that *B. lopezi* extends its niche into secondary growth outside forest is also strongly suggestive of the absence of its congener. Wherever the two species coexist *B. cinnamomeus* occupies

secondary growth, or even some types of small, secondary forest patches, and prevents *B. lopezi* from leaving the forest undergrowth (some cases of counter-singing have been observed on the Nyika, Dowsett-Lemaire 1983). My conclusion is that it is very unlikely that *B. cinnamomeus* occurs on Namuli, and in the absence of tape recordings, this tentative record should be dropped. All specimens collected by Vincent and Cook are of *B. lopezi*, including in bracken scrub.

4.4. Densities of some forest species

Some bird counts were tried in Ukalini but I soon gave up as I felt that my distance estimate was inadequate. Instead exact territory sizes of birds present in some small patches on Muretha Plateau were measured. It is much easier to measure this in an area of fragmented forest, as territorial boundaries are more easily defined. I did this by spending 12 hours on two mornings in three forest patches (of 1.0, 1.4 and 1.5 ha, as measured by GPS), where all territorial birds were identified. Additional information on selected species was obtained in a few other patches on different mornings. Birds were very active in the early morning and counter-singing between neighbouring pairs was frequent. Tape playback was used in some cases to confirm territorial boundaries, and results are shown in Table 1.

Table 1. Territory sizes of 14 bird species measured in small patches (0.5, or 0.7 with bracken, to 1.5 ha) on Muretha Plateau

Species	Territory size	Sample
Livingstone's Turaco:	4-5 ha	2 pairs
Eastern Mountain Greenbul:	1 to 1.5 ha	4 pairs
Stripe-cheeked Greenbul:	1 to 1.5 ha	4 pairs
Cabanis's Bulbul:	1 to 1.5 ha	4 pairs
Olive Thrush:	2.9 ha	one unmated bird
Cholo Alethe:	1.5 ha	one unmated bird
Starred Robin:	0.7 to 1.0 ha	5 pairs
Olive-flanked Robin:	1 to 1.5 ha	4 pairs
Evergreen Forest Warbler:	0.7 to 1.5 ha	4 pairs
Namuli Apalis:	0.7 to 1.5 ha	4 pairs
Black-headed Apalis:	1 to 1.5 ha	3 pairs
Cape Batis:	0.7 to 1.0 ha	5 pairs
White-tailed Crested Flycatcher:	1.0 to 1.5 ha	3 pairs
Dapple-throat:	2.5 ha	one pair

Compared with data from a study on the same or closely-related species on the Nyika (Dowsett-Lemaire 1983), obtained over three years of observations of (mostly) individually colour-ringed birds, these figures are very close. The Nyika study area consisted of over 90 forest patches (mainly in Zovochipolo, 2150-2200 m) and a 25-ha portion of a larger forest (Chowo, Zambian Nyika, 2150 m). All birds netted in Chowo and 10 patches in Zovochipolo (up to 1.2 ha in size) were colour-ringed for individual recognition. The size of all patches was measured on high-quality aerial photographs (1:25,000).

Nyika densities of Cape Batis average one pair/ha, although territory sizes can be smaller than 1 ha in fragmented forest (where the extensive edge increases the habitat); those of White-tailed Crested Flycatcher are slightly lower, and those of Starred Robin slightly higher. Thus the 25-ha section of Chowo contained 36 to 40 pairs of Starred Robin (an average of 0.6 to 0.7 ha per pair). In fragmented forest, pairs of Bar-throated Apalis occupied on average 0.6 ha in patches of round forest, and 0.4 ha in narrow, elongated patches with more edges; patches as small as 0.12-0.15 ha were occupied by one pair. The density of Namuli Apalis on Muretha was found to be lower than this, i.e. one pair in each of four patches of 0.7 to 1.5 ha.

Another very common bird on the Nyika, the Eastern Mountain Greenbul, occurs at overall densities of 2 pairs/ha, but this is in the absence of its congener and competitor, the Stripe-cheeked Greenbul. Where both occur, the densities of either species are about halved: this was verified on Muretha Plateau itself, where four patches of 1.0 to 1.5 ha have only one pair of each. For most species, territory sizes are smaller in fragmented forest than in larger blocks, due to the edge effect or inherent aggressive behaviour (Dowsett-Lemaire 1983). Thus it would be wrong to transfer the densities observed on Muretha to the larger Ukalini and Manho Forests. If pairs of Namuli Apalises can occupy some patches as small as 0.5-0.7 ha (with some adjacent shrubland), they still will not tolerate a neighbouring pair in patches of 1.5 ha, and it is unlikely that there would be more than one pair in 2 ha of continuous forest. Apalises spend much time feeding at sunny edges, as do flycatchers (Cape Batis etc.), and space themselves out more in larger blocks of forest.

For Schalow's Turaco (a very close relative of Livingstone's) the figure of 4 ha/pair was arrived at by observing the whereabouts of individual pairs over three breeding seasons, and is considered to be accurate, even though the birds were not colour ringed. It was relatively easy to identify individual territories in an area of fragmented forest, as pairs clearly owned certain adjacent patches and did not allow neighbours to enter; they defended them daily by chorus singing involving many neighbouring pairs all calling simultaneously. In all, 39 pairs occupied 43 patches totalling 157 ha.

Birds with a more specialized diet occur at lower densities still. On the Nyika the ant-following specialist

White-chested Alethe can breed exceptionally in patches as small as 0.5-0.6 ha (two cases in three years), when an ant colony moves in, but overall densities are low, of 2 pairs in 8-10 ha of larger forest blocks. The 25-ha portion of Chowo contained 5 to 6 pairs. Incidentally my observations on territorial occupancy of small patches by White-chested Alethe were transferred by Collar (2005) to Cholo Alethe (I was wrongly quoted as saying that Cholo Alethe could breed in a patch as small as 0.5 ha, but this has never been claimed). In southern Malawi, densities of Cholo Alethes have been estimated in optimal habitat (in mid-altitude forest) at 2 pairs/10 ha (similar to White-chested), and densities in Ukalini are probably close to this. Alethes are especially difficult to count as several pairs and unpaired individuals congregate at ant swarms, where territorial boundaries break down (but the local pair is dominant over any other, getting to occupy the most productive positions in relation to ants and arthropods flushed by them, pers. obs. and Willis 1985). It is only in the early morning that one has a chance to locate actual territory owners, as males sing briefly at dawn before leaving to search for ants elsewhere if necessary (pers. obs. on several alethe species in Africa).

Ryan *et al.* (1999a) counted birds from 72 points for 5 minutes each and estimated the distances at which the birds had been heard or seen (under or over 20 m), in forest at low altitude (*c.* 1250 m near the Nanchili bridge) and in Ukalini, and individual counts were at least 100 m apart. Figures were then transferred into a formula of a "two counting band" method taken from Bibby *et al.* (1992) that gave actual densities. They recognized partly the risk of the method as they wrote (p. 320) "these density estimates are rather crude and should be treated with caution, because many birds were recorded by song, where distance to the bird is very hard to estimate. If observers actually placed birds within 30 m into the "close" category, it would result in the estimated densities falling by more than half." The method and risks entailed are not discussed by Bibby *et al.* (1992).

Despite this, a table was produced (p. 321) giving densities for 18 species, dropping species counted less than 10 times. Surprisingly, the Olive-flanked Robin, one of the noisiest and commonest birds on Namuli, is not listed. Although they write number of "birds/ha", these figures must often mean number of pairs/ha, as most birds were recorded by sound, and singing, territorial owners are normally paired. Figures for various common small passerines are of the order of 5 to 10 or more birds/pairs per ha (e.g. 12.6 in Namuli Apalis, 10.6 in Stripe-cheeked Greenbul, 9.7 in White-tailed Crested Flycatcher, 8.6 in Cholo Alethe, 8.4 in Starred Robin, ... 2.4 in Dapple-throat etc.). Even for a large non passerine such as Livingstone's Turaco, they produced as many as 5.6 birds or pairs/ha.

Compared to territory sizes measured on Muretha and in the intensive Nyika study, these figures are 5 to 30 times higher, and are way above anything that has ever been found for forest birds elsewhere (e.g. in the forests of north-east Gabon, well documented by Brosset & Erard 1986). This suggests an inherent problem with the methodology and not just a problem of measuring distances, but probably with the formula used (see p. 321 of their paper). As far as I know, this formula had never been used in an African study before this, and had not been tested against figures of actual densities. This shows the danger of relying on complicated calculations in the absence of control against actual figures. Some other factors may also contribute to this over-estimation, including over-crowding of birds induced by recent deforestation, and (for a few species) higher densities than in higher-altitude forest not visited by Ryan *et al.* (i.e. Manho Forest, the largest block on the mountain).

For other passerines, Ryan *et al.* obtained exceptionally high figures of densities of Cholo Alethes, based partly on counts made at low altitude (of *c.* 1250 m), in an area suffering from deforestation for some years. In November 2007 it was evident that a problem of over-crowding was happening in the vicinity of the Nanchili bridge, as several sections of forest bordering the stream had just been cleared by villagers to plant maize. Birds of several species called unusually frequently or even gave chase to each other: there was little doubt that for many species their home range had suddenly been reduced by at least half, and birds that had recently lost their territories were trying to hang on, on the margin of others.

Cholo Alethes do not occur evenly at different altitudes or in different microclimates. Although densities in Ukalini Forest are close to their optimum of perhaps 2 pairs/10 ha, they are very much lower in the larger and cooler block of Manho Forest, and the same comment applies to Green Barbet. In Manho both species have territories spaced out by 500-700 m or more. The lack of ant activity in Manho was indeed striking, as opposed to many signs of ant activity in the warmer Ukalini Forest. Throughout its range in south-east Malawi this alethe tends to become uncommon above certain altitudes, as ant activity decreases with decreasing temperatures.

In the case of four species of conservation importance, Ryan *et al.* estimated total populations for the whole of Namuli Mountain: they proposed a minimum of 5000 pairs for Namuli Apalis, over 1000 pairs for Cholo Alethe, "low thousands" for Dapple-throat, and probably more than 100 pairs for Green Barbet. The first three are, given the available evidence, far too high, and the figure for Green Barbet is also too high, by a factor of perhaps two. The figure for Cholo Alethe is inflated by at least three different causes: inherent methodological problems (as for all species), the fact that Ryan *et al.* did their counts at low altitude (where there is a problem of deforestation, hence over-crowding), and the location in Ukalini (where the microclimate is noticeably warmer than in Manho).

For Namuli Apalis, it is likely that in degraded habitat or thin riparian strips some forest territories are very small, but these birds also exploit secondary growth around forest. Territory sizes as tiny as 0.02 ha given by Ryan *et al.* appear however abnormally small and one is tempted to suppose that there was a problem in measuring distances in the field. The smallest-ever occupied territories on the Nyika (by Bar-throated Apalis) in three years of study are still 7-10 times bigger, and the Namuli Apalises of Muretha Plateau are definitely more spaced out than their relatives on the Nyika.

For Dapple-throat, Ryan *et al.* give densities of 2.4 birds or pairs/ha, and in this species they certainly mean pairs, as there is no duet between mates, and most of the birds heard singing must be paired. Their overall estimated totals of several thousand pairs are way above my own estimates, as one territory studied on Muretha measured exactly 2.5 ha, and densities in larger forest seem to approach 3-5 pairs/10 ha. The species is not uniformly distributed in forest, as it is partial to certain sections of the understorey.

5. Observations on some mammals.

When Vincent (1933) visited, the area was teeming with game. In particular he noticed “amazing numbers of wild pig” (Bush pigs *Potamochoerus porcus*) and Leopards *Panthera pardus* were very common. But he saw “no trace of the bushbuck (*Tragelaphus scriptus*) one might have expected”, indeed. The situation is very different today: wild pigs disappeared long ago, and other large game, if present, has been eradicated. The place of wild pigs is now taken over by feral pigs, which people released in the forests; every now and then they come and kill one. Similarly, all rocky areas are occupied by domestic goats, where one might have expected to see Klipspringer (*Oreotragus oreotragus*). The situation for forest duikers appears desperate; one Blue Duiker *Cephalophus monticola* was caught in a snare by hunters, and the animal (still alive) was presented to some of us at base camp. I did not see any duikers in the forests (nor even any dung). I also spent hours looking for Yellow-spotted Hyrax *Heterohyrax brucei* in optimal habitat (the edge of Muretha Plateau, looking towards Ukalini) and could not find any. There were goats all over the suitable rocky escarpment. Local hunters claim there are still some hyrax, but if so they must have become very rare. It is also evident that there are no Cape Rock Hyrax *Procavia capensis* in the area. Even when uncommon, this species gives itself away with very loud calls, given on a daily basis. None were heard, even though there are several large granitic domes that look very suitable. They are common on Mulanje and might have been exterminated here by hunting. The following species were however noted, or their signs:

Straw-coloured Bat *Eidolon helvum*. Large numbers (100s) of these flew over our camp near the Malema bridge at dusk, coming from the east. Some of them clearly landed in several tall *Parinari excelsa* just beyond our camp, which bore newly-ripening fruits. Some were also seen late at dusk over Muretha Plateau, still flying in a westerly direction.

Zanzibar Dwarf Galago *Galagoides (zanzibaricus) granti*. This is the form in southern Malawi, see Ansell & Dowsett (1988). Appears common in any forest: heard even in thin riparian strips on the Malema river. Also in Ukalini (and Manho Forest, J. Bayliss), but none heard in small patches on Muretha.

Blue Monkey *Cercopithecus albogularis*. Widespread in forest at all altitudes, but virtually exterminated at low levels (there were some in *Parinari* forest above the Malema bridge, in a forest being cleared rapidly). Densities in the intact forest of Manho are very low, and in Ukalini there is only one territorial group, that was calling in the gallery to the north-west. One of the adults came down to feed in the saddle (25 Nov.) but was so harassed by Square-tailed Drongos that it turned back!

Sun Squirrel *Heliosciurus mutabilis*. The odd one or pair seen in a forest patch on Muretha and in Manho Forest. Densities seemed unusually low (perhaps as a result of hunting. There are also rodent traps in many places in the forest).

South African Red Squirrel *Paraxerus palliatus*. One pair was observed at close range in Ukalini Forest, at 1600 m. The Namuli animals apparently belong to an endemic race (described as a separate species *P. vincenti* by Hayman 1950), of slightly larger size than other populations (Smithers & Tello 1976). In pelage they were very similar to animals seen in Malawi. The face was bright red, as the underparts and tip and underparts of the tail. The back was grey-brown, and the top of the tail appeared grizzled, with a few longitudinal lines. There is a very good photograph of one in the Visitor's Guide to Chirinda Forest in Zimbabwe (Timberlake & Shaw 1994), that looks similar to these animals.

(Red Rock Hare *Pronolagus rupestris*. I saw a group of round, pale fawn faeces on the middle of the Ukalini cliff which I would attribute to this species. Those of hyrax are darker.)

The mammals of Namuli remain very poorly documented: Smithers and Tello (1976) mention and map only two species from the mountain, Blue Monkey and Red Squirrel.

6. Biogeographical considerations

The forest vegetation.

The montane forests of Namuli turned out to be more different from those of south-east Malawi than expected, and including of course Mulanje, the nearest and largest mountain. The combination of the four emergents (*Faurea*, *Olea*, *Cryptocarya* and *Ekebergia*) is unique. All four species occur as emergents in some of the forests of northern Malawi, especially on the South Viphya Plateau (Dowsett-Lemaire 1989a: 17, 18), but not all four together and they are next to other large tree species, not present this far south. At least three of these occur in the forests of Mulanje, but *Ekebergia* is not an emergent and *Cryptocarya* is mainly in mid-altitude *Newtonia* forest (where it is not an emergent either); *Olea* is the only broad-leaved emergent on Lichenya Plateau (in addition to Cedars *Widdringtonia whytei*): Dowsett-Lemaire 1988a. At the time I wrote these papers, the taxonomy of the large *Faurea* forest trees had not yet been sorted out: *Faurea wentzeliana* as it was later defined (ex-*Faurea saligna*, Marner 1989, and in White *et al.* 2001) is an Afromontane endemic which ranges from the Albertine Rift and Kenya to northern Malawi. Although White *et al.* (2001) do not mention it for the south-east, it might occur on Mulanje, as I saw and collected the linear shade leaves of a forest *Faurea* in Chisongeli (above 1600 m) and Lichenya (below 1800 m), and this is mentioned in Dowsett-Lemaire 1988a (p. 99). As no fertile material exists, and that two other *Faurea* species also occur (the smaller *F. racemosa* at forest edges, with distinctive red flowers, and *F. delevoyi* in riparian situations), this record was not included in the forest flora. For as long as *Faurea wentzeliana* remains unconfirmed from Mulanje, Namuli is now at

the southern limit of range. The pink-flowered *Faurea racemosa* of forest edges is mentioned as occurring on Namuli in Marnier (1989, White *et al.* 2001), but it must be rare.

The forest woody flora of Mulanje is also of course characterized by the presence of two species of *Widdringtonia* Cedars, one of them endemic, and another large endemic tree, *Rawsonia burtt-davyi*, which locally reaches the canopy and can be quite common, especially in Chisongeli. This *Rawsonia* is readily recognized from its remarkable brightly coloured bark. They are all conspicuously absent from Namuli. Overall, the forest flora of Namuli is less diverse, and this comment also applies to the grasslands and especially montane shrubland. The floristic impoverishment of the latter habitats on Namuli is well reflected in their impoverished bird fauna.

One other record of note on Namuli is *Ocotea kenyensis*, of which I found a large tree in Ukalini. This is probably the only record in northern Mozambique. In Malawi, this is never a common tree, and there are very few large specimens known (typically, it is found mainly as saplings); the only specimen known south of the Viphya is recorded from Mchese on Mulanje. Large trees are easily noticed and identified because of the numerous epicormic shoots, as in other Lauraceae trees.

A small Rubiaceae, *Pauridiantha paucinervis*, is apparently new for Mozambique. Until now it was known to reach its southern limit of range on the South Viphya in Malawi (White *et al.* 2001). On Mulanje it is replaced by another species, *P. symplocoides*.

The avifauna.

Afromontane biome. Of Afromontane endemic or near-endemic bird species (as defined in Dowsett-Lemaire & Dowsett 2006), 27 are now known to occur on Namuli, which compares favourably with 31 on the larger Mount Mulanje (Table 2). One is only on Namuli (Dapple-throat), whereas Namuli Apalis is replaced by another form of the same superspecies on Mulanje. The Moustached Green Tinkerbird is only on Mulanje, but is replaced on Namuli by an Eastern endemic (the Eastern Green Tinkerbird). The four missing from Namuli are Red-tailed Flufftail (on present evidence), Blue Swallow *Hirundo atrocaerulea*, Cinnamon Bracken Warbler and Olive Bush Shrike *Malaconotus olivaceus*. Possible reasons for some of these absences are discussed below.

Table 2. List of Afromontane biome species present on Mulanje and Namuli Mountains.

Afromontane species:	Mulanje	Namuli
Red-tailed Flufftail	x	?
Rameron Pigeon	x	x
Cinnamon Dove	x	x
Cape Eagle Owl	x	x
Scarce Swift	x	x
Bar-tailed Trogon	x	x
Moustached Green Tinkerbird	x	-
Blue Swallow	x	-
Eastern Mountain Greenbul	x	x
Stripe-checked Greenbul	x	x
Cabanis's Bulbul	x	x
Olive Thrush	x	x
Orange Thrush	x	x
Cholo Alethe	x	x
Starred Robin	x	x
Olive-flanked Robin	x	x
Cape Robin	x	x
Cinnamon Bracken Warbler	x	-
Evergreen Forest Warbler	x	x
Yellow-throated Warbler	x	x
Wailing Cisticola	x	x
Bar-throated Apalis (race flavigularis)	x	-
Namuli Apalis	-	x
Cape Batis	x	x
White-tailed Crested Flycatcher	x	x
Dapple-throat	-	x
Eastern Double-collared Sunbird	x	x
Olive Bush Shrike	x	-
Bertram's Weaver	x	x
Red-faced Crimsonwing	x	x
Swee Waxbill	x	x
<i>Sub-Afromontane species:</i>		
Spotted Ground Thrush	x	x

Within the Tanzania-Malawi group Afromontane avifaunas are characterized by a general impoverishment from north to south (Dowsett-Lemaire 1989b: 56, 80). Four Afromontane species reach their southern limits of range on Namuli, Chipirone and adjacent south-east Malawi: Bar-tailed Trogon, Olive-flanked Robin, Evergreen Forest Warbler and Eastern Double-collared Sunbird. Another three, all present on Namuli, go no further than Thyolo Mountain in Malawi, and do not reach Chipirone as far as we know (although the weaver has recently been found on Mabu, Spottiswoode *et al.* 2008): Cabanis's Bulbul, Bertram's Weaver and African Citril. Eastern Mountain Greenbul, a bird of high altitudes only, occurs on just three mountains south of the Viphya Plateau: Zomba (and Malosa), Mulanje and Namuli. The Afromontane Moustached Green Tinkerbird reaches its southern limit on Mulanje, where it is very local: it and the "Eastern endemic" Eastern Green are completely allopatric. The presence of the latter on Namuli precludes the occurrence of the other, but one green tinkerbird remains to be identified on Chipirone (Benson 1950). Finally, the Mulanje population of Cinnamon Bracken is very isolated (the only location south of the North Viphya Plateau), but it is common there in the rich shrubland on the high plateaux. It is a high-altitude species and its absence from Namuli may be due to both the floristic poverty of this habitat and the more moderate altitude of the massif.

The only bird species that occurs on Namuli but is completely absent from Malawi is the Dapple-throat, a most mysterious relic as the only other populations are in the Udzungwas and Usambaras of central and northern Tanzania. It presumably extended down the eastern side of the Rift but it is doubtful that there are now any populations between Namuli and Tanzania, given the lower elevation and distribution of forest as we know it. The African Hill Babbler *Pseudoalcippe abyssinica* is a far more widespread montane species that reaches Mangochi and Namizimu Hills in Malawi, but it does not occur any further south, including on Namuli. On the other hand one montane species from southern Africa, the Olive Bush Shrike, that ascends northwards to Mulanje, Zomba and the Kirk Range (to Chongoni at nearly 14°S) does not reach Namuli. It is so noisy as to be inescapable, and its absence this far east must be considered as genuine.

As Vincent (1933) visited in the winter months, he missed a few of the montane intra-African migrants, like Scarce Swift (a species he collected on Mulanje in early September, when the birds are just arriving). One notable grassland absentee, however, is Blue Swallow, which also arrives in late August or September to leave in April. Its breeding range encompasses the montane grasslands of south-western Tanzania to South Africa. Although common over montane grassland in Malawi, even over small areas of degraded habitat, as in the Kirk Range (Dowsett-Lemaire & Dowsett 2006), all studies failed to find it at Namuli. This swallow is anything but cryptic and it appears genuinely absent, probably due to the nature of the grassland. It nests in natural holes (such as those of Warthog *Phacochoerus aethiopicus*) but especially under overhangs of streams. The rocky or peaty nature of the soils means that water immediately runs off and fills every ditch, thus making the place very unsafe for swallows' nests. Probably the Red-tailed Flufftail is absent for the same reasons.

Eastern biome. Of Eastern endemic or near-endemic species, six occur on Namuli, five in forest (three are barbets and two apalises) and one in bracken scrub (Lesser Seedcracker). One obvious absentee occurring locally in south-eastern Malawi is Green-headed Oriole *Oriolus chlorocephalus*, a bird of well-developed mid-altitude *Newtonia* or *Albizia* forest. It is also absent from the slopes of Mount Mulanje, perhaps owing to rainfall being too high. The extent of mid-altitude forest on Namuli is now very reduced, but must have been important in the past. Other species of mid-altitude forest still occur however, such as Green Barbet. This oriole is known elsewhere in northern Mozambique from Chipirone Mtn (Benson 1950) and has recently been discovered on Mabu Mtn (Spottiswoode *et al.* 2008).

Zambezi biome. Only two Zambezi species are recorded so far, Rufous-bellied Tit and Miombo Double-collared Sunbird. This is not surprising, as most Zambezi endemics are inhabitants of miombo or mopane woodland, and neither is on Namuli. But this tit can be found in other broad-leaved woodland and has obviously adapted to the forest tree *Syzygium cordatum*. The sunbird has a broad niche including bracken with shrubs.

7. Conservation issues

Vincent's base camp was at an altitude of 1400 m, on the Nanchili stream below Ukalini (Vincent 1933). He refers to birds he collected in the immediate vicinity as being in "primeval" or "high forest", giving the impression that the area was thickly forested. Some of the birds he collected there (like Bar-tailed Trogon and Dapple-throat) could not be present in the thin riparian strips left today. The few photographs he published in 1933 unfortunately do not include his base camp nor the lower slopes.

From observations of forest regrowth (by *Harungana* in particular) a long way from the present forest edges, or of scattered forest trees (even strangling figs) dying or regrowing amid fields, there is no doubt that the extent of mid-altitude forest on the eastern slopes has been considerably reduced. Some important sections of the forest near the Nanchili bridge and the Malema bridge had just been cleared (2007) for growing maize. Aerial photos of the late 1960s however already show that mid-altitude forest was largely confined to riparian strips, although broader than today. Human settlements are a fairly recent phenomenon, but there is little doubt that mid-altitude forests suffered from recurrent fires before they were actually cleared for gardens. Vincent (1933) mentions iron-smelting as an important activity in the area, which would also have caused some forest losses.

Some birds species of conservation concern occur at higher densities at medium altitude and have had their populations seriously reduced by deforestation at that level, e.g. Cholo Alethe, and probably Green Barbet. The fate of White-winged Apalis (a bird absent from montane forest altogether) depends on the protection of some strips of riparian forest on the lower slopes. The species has little chance of surviving on Namuli otherwise. Further surveys

are needed to establish where the main population of this bird resides, as it seems to be very uncommon on the wet south-eastern slopes.

On the other hand, other birds are confined to Afromontane forest, and the future of Dapple-throat in particular should be fairly secure if the main blocks of Manho and Ukalini Forests are preserved. The Namuli Apalis is common at both high and medium elevations, and protection of forest above 1500 m will certainly save a substantial population of this bird, despite habitat loss lower down. Figures of a few dozen pairs of Cholo Alethe and Green Barbet proposed for the populations present above 1500 m are low, but in all evidence this is enough for a viable population, as these two species have survived for several decades when mid-altitude forest was already reduced. The rare Spotted Ground Thrush occurs in both Ukalini and Manho, and this discovery is especially encouraging. The discovery of Spotted Ground Thrush on Namuli in the breeding season is the first indication that the species breeds in the mountains of Mozambique, and this discreet bird could (should) be more widespread.

Ryan *et al.* (1999a, 1999b) reported that there was no forest encroachment above 1500 at the time of their visit (i.e. that the forest at Ukalini was completely intact). This is not quite so now, as about 5 ha of forest have been cleared at the lower edge of Ukalini, and there is a considerable problem of *Faurea* extraction in both Ukalini and Manho. In Ukalini, the number of felled *Faurea* is particularly high, creating many gaps in the canopy. Some of these trees have been left lying, planks unused, as if the contract between the buyer and the labourer had been interrupted. In Manho, two small areas of forest at 1700 m or just above were also clear-felled in recent months, to plant potatoes. The opening of gaps in the canopy is of course detrimental to bird species of shaded understorey, among them Cholo Alethe and Dapple-throat.

Although not on the Red List, two species occur on Namuli in very small numbers only, and need special attention. In south-eastern Africa the Olive Thrush is usually very localized, preferring small patches at the highest altitudes. Only a few pairs occur on Muretha (and probably a few more in fragmented high-altitude forest elsewhere), and the fact that one male remained unmated for the whole duration of our stay means that there were very few surplus individuals in the area. When surplus birds of a species are present, individuals whose mate has suddenly been displaced can re-mate by the next day, as shown by translocation experiments on the Nyika Plateau (Dowsett & Dowsett-Lemaire 1986). In Malawi, some populations of Olive Thrush on the top of mountains can be so tiny as to be at risk from extinction (Dowsett-Lemaire & Dowsett 2006): we were unable to find the species on Dedza Mountain in 1983, when we spent several days at the best time of year. It is not even known from any other mountain in Central Region and there have been no observations on Dedza or elsewhere in the Region since Benson collected a single specimen there around 1950 (Benson 1951).

Another species with a tiny population on Namuli is Eastern Mountain Greenbul: it is more common than Olive Thrush, as pairs occur at densities of one/ha, but would nevertheless be vulnerable to any amount of disturbance or collecting. The thrush and the bulbul are interesting cases of small, isolated populations at risk of extirpation.

8. Further surveys needed.

As underlined above, more surveys are needed to define the range of various threatened bird species, on the lower slopes of Namuli peak itself and beyond. Although we are concerned in this study with an area of only a few square km around Namuli peak, the rest of the extensive basal plateau (50 x 40 km) also bears forest in various stages of conservation. The area most visible from Namuli peak or Ukalini lies about 5 km to the south-east, on the other side of a very long dambo (the Malema valley). This dambo is at about 1120 m, and the high ground beyond rises to 1500 m or slightly more: most of it is covered by mid-altitude forest, much of it eaten into by fires and cultivation.

The Namuli massif is also bordered by other smaller mountains, with forest on them. The two most prominent peaks are Sierra Inago (1961 m), 45 km to the north-east of Namuli peak and Sierra Cucuteia (1922 m), 45 km to the north-north-west (altitudes and locations on the ONC map). Both of these have significant areas of forest, as also several smaller mountains along the road between Namuli and the Malawi border. The area of forest altogether is in fact considerable, and remains completely unexplored. How far do Namuli Apalis and other species range into this vast area? Mid-altitude species like Cholo Alethes are likely to be more widespread in this region. For more specialized birds like Green Barbet and the higher-altitude Dapple-throat one cannot propose even a tentative answer, but surveys of nearby massifs should be very instructive.

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Appendix. Bird species tape recorded on this survey.

The more important recordings will be stored with the Wildlife Sound Library in London (BLOWS).

Red-chested Flufftail: songs and territorial calls, Muretha Plateau.

Red-chested Cuckoo: songs (Muretha).

Scarce Swift: calls, over Manho.

African Black Swift: calls of noisy nestlings being fed.

Blue-cheeked Bee-eater: calls of birds flying overhead (Muretha).

Eastern Green Tinkerbird: songs (Manho).

(Livingstone's Turaco, Green Barbet, Yellow-rumped Tinkerbird, all in background of other species)

Striped Pipit: song, near Manho at 1840 m.

Eastern Mountain Greenbul: calls and songs (Muretha).

Stripe-cheeked Greenbul: calls and songs (Muretha).

Cabanis's Bulbul: calls and song (Muretha, Ukalini).

Yellow-streaked Bulbul: few notes of song (Manho).

Olive Thrush: long series of songs, with imitations of Namuli Apalis and Red-chested Flufftail (Muretha).

Orange Thrush: songs (Muretha, Manho, Ukalini).

Spotted Ground Thrush: 3 songs, of 3 whistles each, going down the scale (second note half a tone lower, third 3 tones lower; in the third song the first two notes are on the same pitch, third lower).

Cholo Alethe: alarm or contact calls (Manho), short purred song (Muretha).

Starred Robin: alarm calls and weak song (Muretha).

Olive-flanked Robin: songs (Muretha).

Broad-tailed Warbler: songs (Muretha).

Evergreen Forest Warbler: three main song types (Muretha, also Manho).

Wailing Cisticola: main calls (Muretha).

Singing Cisticola: alarm calls of adults feeding young (Muretha).

Namuli Apalis: songs of male and duets (Muretha, Manho).

Black-headed Apalis: songs, with calls of females (Muretha, Manho).

Cape Batis: song of male and female call (Muretha).

White-tailed Crested Flycatcher: alarm calls (almost song, Manho).

Dapple-throat: several song types (Manho), and more songs from Ukalini, with also aggressive contact calls (modulated whistle) in isolation or included with songs.

Multi-coloured (Black-fronted) Bush Shrike: one song (Manho).

Square-tailed Drongo: few notes (Manho).

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