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The Avifauna of the North Nandi Forest, Kenya

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Abstract

The North Nandi Forest was a very little-known forest area in western Kenya when it was chosen by the Forestry Department of the Kenyan Ministry of Natural Resources to make space for softwood plantation in the late seventies. At that time, only a small part of the forest had been demarcated as a forest reserve. Therefore a joint project of the Department of Sciences of the Kenya National Museums (Nairobi) and the Museum of Natural History Vienna (Austria) was initiated by the authors to survey the fauna and flora of the forest to be able to make proposals for better protection of the area. Two joint expeditions were undertaken in November and December 1978 and 1979. In addition to the zoological and botanical survey, samples and series of some species have been collected to study the composition and systematic affinities of the fauna of the forest. In addition, more than 600 birds have been ringed. In total, 117 bird species have been recorded in the forest, showing that the avifauna of the North Nandi Forest is somewhat intermediate between the lower-lying Kakamega Forest and the Kenyan highlands to the east. There are also some affinities to the bird fauna of Mt. Elgon to the northwest. The occurrence of endemic subspecies and of some rare subspecies restricted to western Kenya supports the need for extended protection of the forest. The study area was revisited in 1988, when the general situation had remained nearly the same. New information shows that continued illegal exploitation of the forest increasingly threatens the flora and fauna of the forest reserve and the surrounding area, which is still unprotected. Improved protection is urgently necessary.

Key words: Avifauna, Kenya, threatened forest, subspeciation, species diversity, distribution in altitude, protection.

Zusammenfassung

Der North Nandi Forest war ein sehr wenig bekanntes Waldgebiet in Westkenia, als es in den Siebzigerjahren vom Forestry Department des Ministry of Natural Resources Kenias zur Abholzung und zur Aufforstung mit Weichholz für die Papierherstellung freigegeben werden sollte. Zu diesem Zeitpunkt war nur ein kleiner Teil des Waldes als Reservat ausgewiesen. Aus diesem Anlaß wurde von den Autoren ein gemeinsames Projekt des Department of Sciences des Kenya National Museums und der Ersten Zoologischen Abteilung des Naturhistorischen Museums Wien zur detaillierteren Erforschung der Fauna und Flora geplant, um Vorschläge für eine Verbesserung des Schutzes begründen zu können. Im November und Dezember 1978 und 1979 wurden daher zwei gemeinsame Expeditionen in den North Nandi Forest durchgeführt. Außer der zoologischen und botanischen Bestandsaufnahme wurden Belegstücke und kleine Serien ausgewählter Arten zur Untersuchung der Zusammensetzung und Übereinstimmung mit benachbarten Gebieten gesammelt. Außerdem wurden mehr als 600 Vögel beringt. Insgesamt wurden im Wald 117 Vogelarten registriert, die die intermediäre Stellung des North Nandi Forests zwischen dem niedriger gelegenen Kakamega Forest und dem Hochland Kenias weiter im Osten bewiesen. Auch mit der Avifauna des Mt. Elgon im Nordwesten wurden Übereinstimmungen festgestellt. Der Nachweis endemischer und weiterer seltener und auf kleine Gebiete Westkenias beschränkter Unterarten von Vögeln unterstützt die Forderung nach einem verbesserten und erweitertem Schutz des Gebietes. Das seinerzeitige Untersuchungsgebiet wurde im Jahr 1988 neuerlich besucht, wobei es nahezu unverändert vorgefunden wurde. Neuere Informationen zeigen aber, daß die fortschreitende illegale Ausbeutung des Waldes die Fauna und Flora des Reservats und des übrigen Arealen zunehmend gefährdet. Eine Verbesserung des Schutzes ist daher dringend notwendig.

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Introduction - Background

The North Nandi Forest (Fig. 1), together with the Kakamega Forest and the South Nandi Forest, is one of the three forests in western Kenya southeast of Mount Elgon which form a belt of nearly 50 km from north to south with a width of more than 20 km but is uniformly high, ranging from about 2000 to over 2200 m above sea level (ZIMMERMAN 1972). It lies along the spine and west side of the Nandi escarpment, spans some 32 km in length and roughly 9 km in width and is also the watershed for the Yala River, which flows westwards through Kakamega Forest to Lake Victoria. The forest area undulates with numerous small streams flowing eastward to form the Kimondi river and then to the Yala. In the past it apparently was contiguous with the South Nandi in the Kaptarop area and perhaps also with the Kakamega Forest, which nevertheless extends to the west at a level which is nearly 300 m lower.

The North Nandi Forest must not be confused with the early records of "Nandi" or "Nandi forest" as cited by JACKSON (1899, 1901, 1902). These specimens (now partly housed in the bird collection of the Field Museum of Natural History, Chicago, in the following abbreviated as FMNH) were certainly not collected in the area now gazetted as North Nandi Forest, but were taken about "20 miles north of Kibigori" on the Kenya railway. The same applies to Meinertzhagen, who collected there in 1902-1906 (JACKSON 1938), for in the early days large areas of the forested country east of Kisumu were known as Nandi (ZIMMERMAN 1972), extending from the present South Nandi Forest south to Lembus Forest near the Ravine along the Nandi Escarpment. For example, MEINERTZHAGEN records he ascended the Nandi Escarpment from Kibigori (0.04° S, 35.03° E) on the newly constructed railway line to Kisumu to reach Nandi Fort (= Kaptumo) and from there they walked south in the forest to the Ravine. The early caravan route to Uganda commenced at the Ravine and travelled north towards Mount Elgon to the Nzoia River, which was followed westwards to Mumia's village and then into Uganda, thus bypassing the North Nandi Forest. Later routes commenced closer to Kisumu travelling up the Nandi Escarpment to Nandi town via the Kakamega Forest and Yala River to Kapsabet (0.12° N, 35.06° E). To the south lies the South Nandi Forest, which today has little indigenous forest due to logging and the conversion to tea estates and exotic timber plantation. The North Nandi Forest had also already been subject to exploitation of commercial timber species on a large scale.

The North Nandi Forest was first gazetted in 1936 as a Trust forest with an original area of 11.850 ha, but it remained isolated except as a potential area for timber extraction. In 1968 the North Nandi Nature Reserve was established, amounting to 3.434 ha running about 30 km along the spine of the escarpment but only about 1 km wide. In 1976 the Kenyan Government proposed to convert a very considerable portion of this forest area into an exotic softwood plantation to supply the future needs of the pulp and paper mills at Wabuye (old Broderick Falls = Webuye, 0.36° N, 34.46° E), however a very small portion of the the North Nandi Forest, practically a long narrow strip on the western ridge, was demarcated in 1976 and declared as a Nature Reserve in 1978 by Legal Notice 136, Supplement 52, August 1978.

Since the forest was gazetted, a total of 1.343 ha have been excised, including part of the nature reserve. An additional 410 ha has been converted to Nyayo Tea Zone. Therefore the present area of the gazetted forest is 10.501 ha. Of this, an estimated 8.000 ha

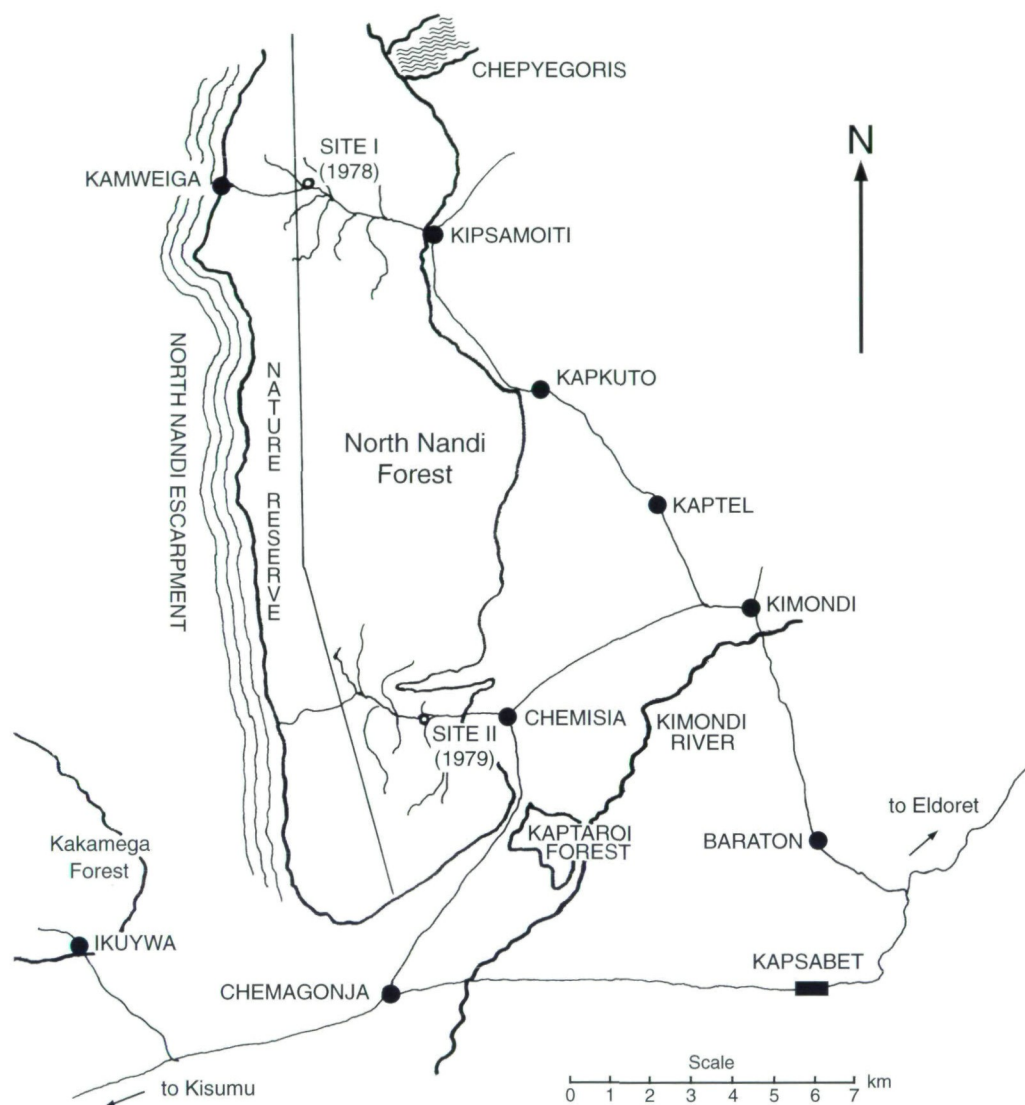


Fig.1: Sketch map of the North Nandi Forest with the study areas.

still is indigenous forest, the remainder consisting of cultivation, scrub, grassland and tea, as the conversion of the forest to plantations, as was originally envisaged, has not taken place; however, the forest still remains a narrow strip which is under severe pressure from illegal timber extraction, charcoal burning, forest grazing of livestock and the unsustainable removal of forest products. There has been considerable encroachment and clearance on the western edge of the forest, especially since 1982, and because the forest boundaries are unclear, this has been difficult to control. The nature reserve still has not received any special protection compared to the rest of the forest.

It was questionable whether such a narrow strip could prove to be a viable reserve at all. The flora and fauna had never been fully investigated, though a forest tree inventory of exploitable timber was taken. The gazetted area had an area of 119 km² with some 93 km² of indigenous forest at an altitude of ca. 2000 m to 2200 m above sea level (OCHANDA 1978) above the escarpment which runs roughly north-south, with the western edge descending some 300 m to the Kakamega Forest, which ranges from 1460 - 1700 m (ZIMMERMAN 1972).

The Division of Natural Sciences of the National Museum in Nairobi proposed that in light of the threat that the forest could be converted to plantation, there was an urgent necessity for the forest to be investigated in some depth. Thus it was felt that no time should be lost in exploring the forest botanically and zoologically, also by collecting specimens, in order to be able to publish an inventory of the fauna and flora composition for the purpose of demanding improved protection and/or the declaration of a larger protected area. Therefore, during a visit to the Division of Natural Sciences of the National Museums of Kenya in November, 1976, plans of a joint expedition to the North Nandi Forest in western Kenya were discussed by the authors, who realised that no literature on the area had even been published and no collections had been made in the forest. The only previous survey of the avifauna was undertaken by Diamond and Fayad over a ten-day period in January 1978; they collected 25 specimens which have been now deposited at the National Museum; they also prepared a check-list of 80 species based on sight records (DIAMOND and FAYAD 1979). The Kapkuto area had already been visited briefly by Cunningham-van Someren in November 1977, when a few birds were collected.

It was agreed by G.R. Cunningham-van Someren (CvS) of the Kenya National Museums (NMK) and by Dr. Herbert Schifter (HS), Curator of Bird Collection of the Museum of Natural History in Vienna (NMW; Austria), to start the survey in 1978. The Museum of Natural History contributed 10.000 Kenyan shillings to the project and made further contributions during field studies, while the National Museum of Kenya provided logistical support as well as scientific and technical staff for the proposed period of six weeks.

Penetration into the forest was only possible via the logging tracks; thus a survey team should be able to gain access into the depth of the forest though it is still off the beaten track with only an unpaved road approaching from Kapsabet along the eastern edge, which is now densely settled by smallholder farmers. Much of the forest is degraded, particularly to the east, and has been exploited extensively in the past. Some felling of economic species still continued during our visits (mostly illegal pit-sawing by local people), even in the Nature Reserve which is not protected by the Forest Department; the boundary cut-lines delineating the reserve were overgrown.

The reserve is a long, narrow strip of forest on the western edge of the escarpment, roughly one kilometre wide and some 20 kilometres long. It is not demarcated. The forest may be entered at three points: the north is accessible by way of the track from Kipsamoite to Kamweiga (Fig. 2, Fig. 3), the central part via a rough track by the forest post near Kapkuto, and the south can be reached from Chemisia. These tracks were logging roads, now very rough and overgrown with many deep water-logged ruts, so caution is necessary. The best months to visit the area are from November to February, during the dry season. At other times of the year, the tracks are virtually impassable.



Fig. 2: North Nandi Forest, eastern forest edge with native cultivations (Photo: H. Schifter).



Fig. 3: Camp on the Kamweiga-Kipsamoiti-Road in the North Nandi Forest, November 1978 (Photo: H. Schifter).

The authors decided to camp well within the forest and work in a radiating pattern to collect and observe flora and fauna as well as to gather as much data as the staff could within the time available. In 1978, the camp was set up on a logging track between Kipsamoiti to the east and Kamweiga to the west, towards the northern end of the escarpment at 0° 20.7' N and 35° 58.1' E. This track and Kamweiga are not shown on the 1:25.000 map of Kenya, 1966 (Fig. 1). Supplies had to be taken along from Nairobi. Only water could be carried up from a clear spring below the camp. However, water was obtained later from the stream at Kimondi and Chepyegoris. Kapsabet was a commissary supply base during the field studies, accessible by road at a distance of some 24 km via Kaptel and Kimondi - Baraton.

In 1978 the staff consisted of the following persons: Dr. Herbert and Theresia Schifter from 8 November to 11 December; A. Duff-MacKay, Herpetologist, from 6 November to 19 November; G.R. Cunningham-van Someren, Ornithologist, from 6 November to 19 November and from 3 December to 14 December; M.P. Clifton, Entomologist, from 18 November to 2 December; I.R. Aggundey, Mammalogist, from 19 November to 2 December; C. Muringo, Assistant, Section of Ornithology, 3 December to 14 December; J. Meskill, Entomologist, 3 December to 14 December. Technicians: Syingi Kethele, Joseph Kwambai, Julius Kilonzo, Peter Nyamwenya, Ali Hamisi and Wambua Wangao. Miss E. Oxtoby visited the area for a few days in order to study the Annelid fauna. Thus in 1978 the joint museums' party spent at all 37 days (8 November-15 December) in the forest.

Phase 1 was so successful in 1978 that the decision was made to continue the survey in 1979 with mostly the same staff. Further emphasis was placed on the survey of small mammals and additional staff from the Natural History Museum in Vienna joined the survey team (i.g. Dr. F. Weiß-Spitzenberger, Mammalogist, and H.-G. Wiedenroth). The staff of the Vienna Museum arrived in Nairobi on 15 November 1979, and stayed in the forest from 19 November to 12 December 1979, whereas the NMK staff returned to Nairobi on 15 December 1979, spending 27 days in the forest. In 1979 operations were moved some 12 km south, bypassing Kapkuto to a track entering the forest near Chemisia, 0.15° N, 35.00° E.

As a first step, the avifauna was studied in detail by comparing specimens with those of the forests of Mount Elgon to the northeast and with the lower forest of Kakamega to the west (Fig. 4). The survey resulted in the naming of eight new subspecies of birds belonging to the families Pycnonotidae, Turdidae and Timaliidae (CUNNINGHAM-VAN SOMEREN & SCHIFTER 1981). These types have been deposited in the Department of Ornithology at the Kenya National Museums, whereas the general collection has been divided between NMK and NMW. Unfortunately, the survey of the North Nandi Forest could not be continued and it was not revisited until 1988, when a short return to the area studied in 1979 resulted in the recapture of three birds ringed there nearly nine years earlier (GICHUKI & SCHIFTER 1990).

Forests: Forest composition is of mixed species, some also represented in the Kakamega. Most specimen trees of economic importance had been felled and at Phase 1 camp, the forest was littered with huge logs, most of which were hollow and useless and therefore discarded. Such huge logs impeded progress through the forest. Felling had also damaged and killed many other trees adjacent to the desired specimen. The canopy was broken, which resulted in many forest floor species of shrubs and herbs including exotics penetrating

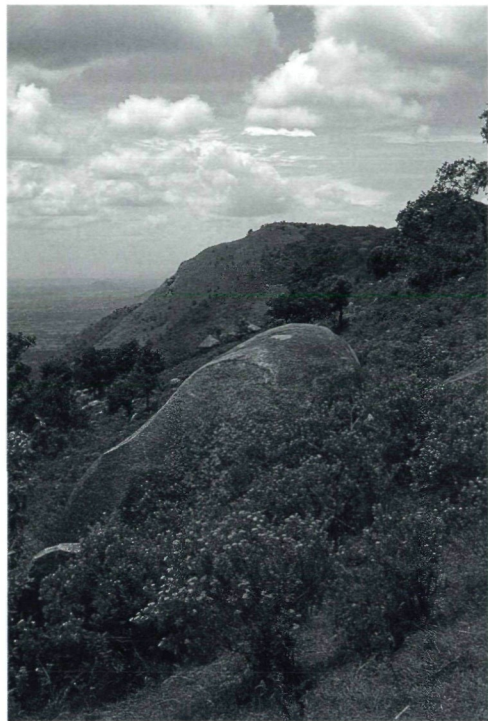


Fig. 4: Escarpment W Chemisia overlooking Kakamega Forest, September 1988 (Photo: H. Schifter).

the forest proper, at some points forming almost impenetrable thickets through which mist-net traces had to be cut. Where the canopy was reasonably covered, there was little understory vegetation other than thin-stemmed saplings. Stream edges were densely covered by vegetation, with *Cyperus* sp. and Gramineae forming small marshy areas. As it is a mixed-species forest, five emergent species towered above its original canopy: *Antiaris toxicaria*, *Aningeria altissima*, a buttressed species, *Diospiros abyssinica* with its yellow fruit, *Manilkaria butugi* with its yellow fruit which is edible to humans and *Chrysophyllum albidum*, all over 27 m, some as high as 45 m and out of 12-bore shotgun range. Intermediate species included *Maesopsis emini*, *Macaranga* sp., *Poliscias fulva*, and *Premna angolensis* up to 27 m.

Smaller trees were notably *Harungaria madagascariensis*, *Cussonia* sp., conspicuous during Phase 2; *Tabernaemontana* sp., *Cordia abyssinica*, *Albizzia* sp., *Vitex doniana*, *Celtis gomphophylla*, *Trichilia dregeana*, *Trema orientalis*, *Bersema* sp., *Fagaropsis angolensis* and *Ficus* sp., *Teclea* sp. and during Phase 2 many stands of *Dracaena laxissima* and *Ensete ventricosum*.

Along logging tracks, where more open conditions prevailed, thickets of *Hibiscus* spp., *Vernonia* sp., *Grassocephalum* sp., spikey *Acanthus arboreus*, *Solanum* sp., *Brilliantasia* sp. and *Minulopsis* sp. in dense thickets, whose close-set stilt roots made penetration extremely difficult. Lians and other creepers were relatively scarce in the Phase 1 area, as were bryophytes and epiphytes, though they were more conspicuous at the Phase 2 site and included Orchidaceae and Loranthaceae. On the whole, there was little ground herb cover except near the logging tracks.

Climate: As no rainfall recording stations were within the area of operations, a measurement of annual rainfall for the forest is taken from North Nandi Forest Station at the south end of the forest near Kapsabet (Courtesy Kenya Meteorological Department). This shows two peaks with a total precipitation in 1978 of 2481.1 mm (99.24 inches) and 1847.8 mm (73.9 inches) for 1979. In 1978, conditions were wet throughout our survey period with 231.5 mm and drier in 1979 with 111.5 mm; however, the previous September and October had seen heavy rains of 833.2 mm, whereas they had only 236.3 mm over the same period in 1979. In Kakamega precipitation generally exceeds that of North Nandi, where ZIMMERMAN (1972) recorded a mean of 2210 mm over the period of 1963-1965, with a total of 3600.0 mm in 1963. During the two periods, temperatures ranged from 14° C to 29° C in the afternoons.

The Bird Fauna of the North Nandi Forest, Western Kenya

DIAMOND & FAYAD (1979) had paid a short visit to the North Nandi Forest prior to ours, from 3 to 9 January 1978, and performed a preliminary comparison between the avifauna of the North Nandi and Kakamega forests, which is based on a relatively small sample of the avifauna taken over a relatively short period of time. Both forests were briefly described by them as well. They draw attention to the similarity of the forest tree composition at Nandi and Kakamega, quoting OCHANDA (1978), but they do not mention the composition in the lower strata, which harbours some 60 % of the bird species. We would question the validity of the similarity of the tree species in Nandi and Kakamega and the distribution of the avifauna, which is reportedly closely tied to that of the forest trees, as we are forced to doubt the value of any comparison in which the condition of the forest canopy, the forest's degraded state and the species and density of natural and invasion species of undergrowth vegetation is not taken into account. Here the Kakamega is relatively undisturbed, while the North Nandi is but the remains of a primary forest, only in respect of its tree species. The natural canopy has gone, the undergrowth is of non-forest invasion species, quite unlike to the undergrowth of the Kakamega, as seen at the Forest Station where DIAMOND carried out his studies.

In addition, we found our two study sites markedly different, particularly with respect to the species as well as the diversity and density of the lower-strata vegetation, although the emergent trees were not uneven in species nor numbers. Similarly, both of these areas differed somewhat from the Kapkuto site. At the Chemisia area, trees carried far more epiphytes, creepers and lianas, but these differed in species composition from those of the Kakamega forest, where the undergrowth is composed largely of *Dracaena*, which is virtually absent from the North Nandi. "Wild banana" (*Ensete ventricosum*), tall *Brilliantasia* and *Minulopsis* were quite prevalent at Chemisia, although they were scarce at Site I. We are of the opinion that the floral composition of the undergrowth, the presence or absence of epiphytes and creepers forming the lower to mid-strata vegetation is an important factor determining the bird species composition and numbers, while the larger emergent tree species are not important in relation to the avifauna, particularly of the higher canopy strata vegetation.

Given the use of mist-nets as the major tool for sampling the avifauna, it was clear that mainly lower-strata species would be captured. Our few very high-set nets did not yield many birds. Some arboreal species were therefore collected by shooting. Our method of netting was substantially the same at both sites. Sets of several nets were set up in the existing overgrown logging tracks or in traces cut through the undergrowth, usually from the hill-crest down to the valley bottom. Nets were open day and night, but sets of nets were moved to new sites every 48 - 72 hours so that a considerable area of forest was sampled.

In 1978, we worked some 300.000 net foot hours (nhf) and in 1979 some 400.000 nhf; capturing 867 birds of 60 species in 1978 and 923 of 58 species in 1979. This added up to a sample of 68 species, which is to be compared with the Kapkuto sample of 208 birds of 35 species over five days employing 44.389 nhf. We thus recorded 50 % more species while employing nearly ten times the daylight nhf over 54 days. All species taken in nets are included in the table, as are other species recorded by shooting and sight records. The total known forest avifauna of North Nandi now stands at 117 species; 37 more have to

be added from the forest edge and surrounding areas. This figure compares with 160 species for the Kakamega Forest and 122 species for Mount Elgon (National Museum Check-list, 1980, complemented with the compilation of KINGS, 1997).

We feel that our figures now provide a more realistic assessment of the avifauna of the North Nandi Forest. There is a considerable variance with the Kapkuto results, as is to be expected.

It is essential to reiterate the fact that our two sites in the Nandi Forest differed from each other botanically and ecologically. They also differed from that at Kapkuto and more so from Kakamega. Furthermore, the weather previous to and during our two visits contrasted somewhat, as 1978 was generally wetter, which most likely affected the vegetation, food resources and possibly the breeding period. The weather conditions during the Kapkuto study or at Kakamega were not recorded, but this could be important to netting results. It is entirely possible that net catches could be reduced if birds are breeding at the time of sampling, certainly with regard to the numbers of females secured. This is supported by our positively sexed specimens, for out of a total of 1790 birds, 1079 were sexed and 60 % were males, which rather strongly suggests that females may have been on the nest and or less active and the chance of their being captured was greatly reduced. Where sexes are alike, the voucher specimens were taken at random. The North Nandi bird breeding period will be discussed elsewhere.

The relative abundance of the more common species at our two sites generally coincides with the rank order 1 - 12 in the table given by DIAMOND & FAYAD (1979), but only four species taken at Kapkuto match, more or less, our findings, i.e. *Andropadus latirostris*, *Sheppardia aequatorialis*, *Phyllastrephus placidus* and *Spermophaga ruficapilla*. In the case of less numerous species, there was reasonable consistency in rank order at our sites; however, these differ very considerably from the Kapkuto sample. The rank order of species at our two sites is generally in line, while the arithmetical means of rank order at the two sites coincide with the rank order based on the combined numbers of each species for both sites.

We would also like to draw attention to the fact that nine species from Site I were not represented at Site II, while eleven species at Site II were not recorded at Site I. There is naturally a strong bias towards birds of the ground to mid-strata habitat in our records, as collecting by shooting was kept purposely low and was more selective amongst birds of the tree tops so that no accurate and comparative figures can be given as such; however, it is certainly true to say that some of the mid to tree-top feeders were quite inadequately sampled and the population was clearly greater than reflected in our figure. One such example is that of *Apalis cinerea*, which was an extremely common and noisy species of the higher levels and which might easily be given a much higher ranking than that in our figures of samples. Based on the innumerable sightings throughout the day, its rank would be something to the order of 9.

Some 16 species can be considered birds of the mid- to upper strata and are thus poorly represented in the net catches. Terrestrial forest species are also poorly represented, for example the two crakes *Sarothrura elegans* and *S. pulchra*, since nets were seldom set at ground level. We failed to capture *S. pulchra* despite many specially low-set nets and the use of playback tape recorders. They were obviously quite numerous, since several

would respond to the tape in a very limited area in the swampy, dense cover of the stream. Our only voucher specimen of *S. pulchra* was eventually secured by shooting. Crested Guineafowl *Guttera edouardi* was also well distributed but difficult to secure. The rank order of such birds is very adversely biased. We are surprised at the rank order of *Nectarinia olivacea* for the Kakamega forest and Kapkuto, which we set at 10 although we considered this sunbird to be common despite the few flowering trees and shrubs at both sites. It is possible that the Kakamega sampling was undertaken at periods of higher nectar production for the species to be ranked there at 2. We are equally surprised at the statement concerning *Alcippe abyssinica* as an arboreal species because we took 81 specimens from our nets, which suggests that this species generally inhabits the lower strata along with *Sheppardia*, *Alethe*, *Trichastoma*, *Kakamega* and *Phyllastrephus placidus*.

We believe that the difference in numbers of some species taken at the two sites is due to the species and density of the lower strata vegetation, as example *Bathmocercus rufus* was common at Site II, similarly *Pogonocichla stellata*, *Platysteira peltata*, *P. jamesoni*, *Ploceus melanogaster* and *Prinia bairdii* for cover was denser with far more creeper festooned trees. The more open cover at Site I favoured *Turtur tympanistria*, *Alethe poliocephala* and *Camaroptera brachyura*. The far greater number of *Linurgus olivaceus* taken at Site II may well have been fortuitous in that we had unwittingly set more nets at or near a favoured feeding resource, since all the specimens were taken in a limited area and within a few days (stomach contents were small flat white seed, probably from *Acanthaceae*). Nets set near a food resource which went unrecognised probably accounted for the fact that we secured *Serinus burtoni*, *Cryptospiza salvadorii*, *Mandingoa nitidula* and *Nectarinia preussi* at Site II only.

Observations made at netting sites suggest that a far greater sample of birds could have been obtained if nets could have been set to capture birds moving in the mid-story around 4 to 8 m above ground level. Many species, a few of which we took by chance in the standard nets, were noted to fly just above the nets and just above the dominant ground cover vegetation. Therefore, such netting was used in 1979 to some extent at higher levels, thus a somewhat higher capture rate could be achieved, conveying a better picture of the bird population in this zone, which could very well drastically alter the rank order.

A comparative check-list of species recorded for the three forests of Kakamega, North Nandi and Elgon has been compiled. It shows that there are 73 forest bird species common to all three forests with only 6 species common only to Elgon and North Nandi. While 25 forest dwelling species are common only to North Nandi and Kakamega, yet 19 species are common only to Elgon and Kakamega. Concerning indigenous forests, it is regrettable that we have no full check-list for the South Nandi forest, which is greatly reduced in area today. Some indication of the past distribution might be possible.

DIAMOND & FAYAD (l.c.) suggest that the North Nandi and Kakamega could have been joined in the past, since they are only some 5 km apart; however, the North Nandi rises some 300 m above the Kakamega. Also, the North and South Nandi could well have been contiguous in the Kaptarop area, though the indigenous forest is now broken up (ZIMMERMANN 1972). As already mentioned in CUNNINGHAM-VAN SOMEREN & SCHIFTER (1981), the birds collected and listed by JACKSON (1899, 1901, 1902 & 1938) were taken about 20 miles



Fig. 5: Track in the North Nandi Forest W Chemisia with dense undergrowth, September 1988 (Photo: H. Schifter).

north of Kibigori Station. What is now the South Nandi Hills remnants certainly were at one time contiguous with Tinderet Forest, which ran along the escarpment as far south as Mau Summit and Londiani.

On the contrary, it is unbelievable that the North Nandi was ever contiguous with the Elgon Forest, as *Pogonocichla stellata* is represented in North Nandi by a quite different subspecies which does not have the all-black tail of the Elgon birds. *Turdus olivaceus* of the North Nandi is also distinct from the Elgon race, and this species is not known from Kakamega, nor is *Pogonocichla*. We have already reported elsewhere (CUNNINGHAM-VAN SOMEREN & SCHIFTER 1981) that certain North Nandi birds can now be separated as distinct racial forms due to, we suggest, sufficient geographical isolation over time, from either the Elgon or Kakamega low-forest forms.

The separation of North Nandi and Kakamega would have had to take place eons ago in order to produce the distinctive subspecies seen today. We admit the imponderables, such as why *Trichastoma rufipennis*, *T. fulvescens* and *Trochocercus nigromitratus* are not present on North Nandi while *Turdus olivaceus*, *Pogonocichla* and *Trochocercus albonotatus* are not found in Kakamega. As the North Nandi Forest had never been investigated in depth, we were keen to compare the avifauna with that of the lower Kakamega Forest and the forest of Mount Elgon. The North Nandi Forest is highly degraded, having been subject to exploitation over very many years with the result that the natural canopy is broken and much of the ground cover vegetation now does not consist of true forest species; this invasion cover is very different from the ground cover in the Kakamega and Elgon Forests.

In total, some 1800 birds were handled, either caught in mist-nets or collected by shooting. Nearly 600 birds were ringed in 1979. Several species are noted in sight records only. In addition, a few birds not recorded by us but which were reported by DIAMOND & FAYAD (1979) have been included. From 24-29 September 1988, the study Site II near Chemisia was revisited in a joint operation of HS and Th. Schifter (who had also taken part in the earlier expeditions) and the Department of Ornithology of the Kenya National Museums, represented by Cecilia M. Gichuki-Muringo and museum staff. Nets were again set up along the old tracks, which had become somewhat overgrown in the meantime (Fig. 5). 131 individuals were captured and more were recorded by sightings or by

their voices, especially by Dr. Colin Ryall who had joined the survey. Among the mist-netted birds, three birds originally ringed between 18 - 23 November 1979 were recaptured, thus making them at least nine years old. They were: a Brown-chested Alethe (*Alethe poliocephala*), recaptured only 100 m from the original site together with a male; a Banded Prinia (*Prinia bairdii*), recaptured 150 m from the original site which was nearer to the forest edge; and a male Red-headed Bluebill (*Spermophaga ruficapilla*) recaptured within 30 m of the original site (GICHUKI & SCHIFTER 1990). 56 birds were released after being ringed and 24 were released after color-marking, but as the locality has not been revisited since, nothing is known about them.

This manuscript was already prepared after the first two joint expeditions to the North Nandi Forest, and it was originally planned to be published as a part of a general faunal overview of the threatened area, preferably after additional surveys, which unfortunately could not have been realised. Therefore it is submitted with additions in memory of G.R. Cunningham-van Someren (10 November 1913 - 14 August 1997), who passed away unexpectedly before the final version was finished. The systematic sequence and nomenclature in the annotated list of species mostly follows SHORT et al. (1990).

Acknowledgements

I am very grateful to Dr. Leon Bennun, Head of Department of Ornithology, The National Museums of Kenya, Nairobi, Kenya for supplying information about the present status of the North Nandi Forest.

Annotated List of Species Recorded in the North Nandi Forest

Family Ciconiidae

White Stork, *Ciconia c. ciconia* (L.)

One large flock sighted in migration in partly cultivated area on burnt trees near Chemisia in 1979 at about 2000 m above sea level.

Family Threskiornithidae

Hadada, *Bostrychia hagedash brevirostris* (REICHENOW)

Only regularly seen in a swampy area in a small river near Kamweiga. Has already been recorded by DIAMOND & FAYAD (1979: 96).

Family Accipitridae

Black-breasted Snake Eagle, *Circaetus pectoralis* SMITH

Recorded by DIAMOND & FAYAD (1979: 96), but not among the species associated with the forest and not observed during our survey.

African Goshawk, *Accipiter tachiro sparsimfasciatus* (REICHENOW)

Occasionally seen; one female weighing 311.0 g caught in net 1 December 1979, probably trying to remove a netted bird. Also heard 23 September 1988 in forest near Chemisia. Call in flight: a high-pitched "Keek - keek".

Black Sparrowhawk, *Accipiter melanoleucus melanoleucus* SMITH

Occasionally seen inside the forest in 1978; a pair probably feeding young near the camp, 25 November 1979.

Augur Buzzard, *Buteo augur* (RÜPPELL)

Only one specimen noted 24 September 1988 flying at escarpment overlooking Kakamega but not seen before at forest edge in the north and east.

Long-crested Eagle, *Lophaetus occipitalis* (DAUDIN)

Recorded by DIAMOND & FAYAD (1979: 96) but not listed among the birds associated with the forest; not seen by us in or near the forest.

Crowned Eagle, *Stephanoaetus coronatus* (L.)

One pair regularly seen circling above the forest in 1978 and 1979, but no nest site has been found; two birds seen again near Chemisia 24 September 1988 soaring over forest and at escarpment overlooking Kakamega.

Family Phasianidae**Crested Guineafowl, *Guttera edouardi verreauxi* (ELLIOT)**

3 ad. males 6 December 1979, 1150, 1200 and 1220 g, 2 pull. 25.0 and 28.2 g. Gonads of male weighing 1200 g was measuring 15 mm in diameter. Already positively identified by feathers in 1978 near Kamweiga, but a larger group of young birds only discovered in forest on 6 December 1979 when a very small young one (probably not older than one day) was brought to the camp alive (Fig. 6.) and stayed with us until our return to Nairobi; fed with small insects and became imprinted within a few hours. The call of the chick has been tape recorded (CvS). After CROWE (1978) *G. edouardi* should be lumped with *G. pucherani* and subspecies *seth-smithi* included in *G. pucherani verreauxi* (ELLIOT); therefore all Crested Guineafowl of Kenya are included in *Guttera pucherani* more recently (SHORT et al. 1990: 85).

Scaly Francolin, *Francolinus squamatus schuetti* CABANIS

1 male weighing 600 g brought to camp 24 November 1979; probably rare in the forest due to hunting but two more unidentified francolins were observed alongside a net near the forest edge, 21 November 1979; also listed as rare in Kakamega Forest by ZIMMERMAN (1972: 287). *F. squamatus* has already been recorded in "Nandi" by JACKSON and listed among *Francolinus squamatus maranensis* MEARNs (JACKSON 1938: 254), but HALL (1963: 137) has united all Scaly Francolins from the southern Sudan, Ethiopia, Kenya to Zaire and north-eastern Angola as *F. s. schuetti*, restricting the distribution of *F. s. maranensis* to the type locality (Mount Kilimanjaro) and admitting an intermediate population for eastern Kenya only. Recently regarded as monotypic (CROWE in URBAN et al. 1986).



Fig. 6: Chick of Crested Guineafowl *Guttera edouardi*, caught when only 1 day old, 8 December 1979 (about 3 days old) (Photo: H. Schifter).

Family Gruidae

Gray Crowned Crane, *Balearica regulorum gibbericeps* REICHENOW

A pair only seen in large clearing near Kapsabet in 1979. It had already been recorded in "Nandi" by JACKSON (1938: 317). More often seen in swampy patches near Kapsabet, also in 1988.

Family Rallidae

White-spotted Flufftail, *Sarothrura pulchra centralis* NEUMANN

One male weighing 45.5 g shot near Chemisia 10 December 1979. Tape recorded and answered readily to playback. Nets set in forest stream swamp failed to capture birds which are extremely shy yet answered the playback in 1979. Has already been recorded in Nandi and Kakamega by VAN SOMEREN (1922: 23) where it reaches the eastern boundary of its distribution (SHORT et al. 1990: 89).

Buff-spotted Pygmy Flufftail, *Sarothrura e. elegans* (A.SMITH)

One male weighing 51.5 g caught in a net along a track deep in the forest on a slope near a swampy area (Fig. 5), one not fully adult female weighing 46.5 g caught 21 November 1978. One female collected by ZIMMERMAN (1972: 287) in Kakamega Forest weighed only 37 g.

Red-chested Flufftail, *Sarothrura r. rufa* (VIEILLOT)

One female weighing 33.7 g caught on 29 November 1979 in a mousetrap in a swamp near Chemisia. Very little weight data on male specimens had been recorded to date, but no weight at all for females (KEITH, BENSON & IRWIN 1970: 47; S. KEITH in URBAN, FRY & KEITH 1986: 90).

Family Scolopacidae**Green Sandpiper, *Tringa ochropus* L.**

2 females weighing 79.5 and 70.0 g caught in nets near pools and wet spots in the forest; occasionally seen near small wet spots along tracks after heavy rains in 1978.

Family Columbidae**Green Pigeon, *Treron calva gibberifrons* (MADARASZ)**

Occasionally seen in fruiting trees in 1978 and 1979; following cycles of fruiting trees, particularly fig (*Ficus* sp.) in North Nandi Forest. Only noted as occurring irregularly in Kakamega Forest by ZIMMERMAN (1972: 288) but already listed by JACKSON in "Nandi" (JACKSON 1938: 475) being treated there among *Vinago calva salvadorii*.

Tambourine Dove, *Turtur tympanistria fraseri* BONAPARTE

Very common and widespread in both census areas in 1978 and 1979 and regularly caught in low nets along tracks, where it was also seen flying along; also noted in 1988. Weight of adult males ranged from 65.0 to 80.5 g (19 skins and specimens caught in mist-nets and released after ringing), adult females weighed 60.0 to 81.3 g (8 specimens), two subadult females collected 27 November and 5 December 1978, 56.5 and 60.0 g; one adult female caught in a mist-net 24 November 1979, 54.0 g. One female with yolking egg collected 9 November 1978 weighed 71.0 g, another with a well-developed egg measuring 25 x 19 mm caught 4 December 1979 (75.2 g), and one female with an egg measuring 27.4 x 18.6 mm 8 December 1979 weighed 81.3 g. Males with large gonads collected November and December 1978; most specimens in breeding condition, whereas males collected in Kakamega Forest in July and August were not yet in breeding condition (ZIMMERMAN 1972: 288). Stomach contents: grit and seeds; a male weighing 76.5 g when it was ringed 5 December 1979 weighed only 73 g when retrapped 8 December 1979 at the same site due to obviously nearly empty crop. Also recorded near Chemisia in 1988.

No subspecies have been admitted more recently in the Tambourine Dove (BRITTON 1980: 71, MOREL, MOREL & FRY in URBAN ET AL. 1986: 451), but LAWSON (1964: 64) pointed out that *T. t. fraseri* can be separated from the nominate subspecies in that its crown and nape are blacker and browner, less grey, and the mantle and rump much richer and redder, less olivaceous brown than birds of the nominate subspecies occurring only south of the Zambesi. Our specimens clearly show the colour characteristics pointed out by LAWSON.

Blue-spotted Wood-Dove, *Turtur afer* (L.)

Only seen in cultivated areas just outside the forest near Chemisia in 1979. Has also been observed inside Kakamega Forest, spending only part of the day there (ZIMMERMAN 1972: 288).

Olive Pigeon, *Columba a. arquatrix* TEMMINCK

One subadult male weighing 325.0 g shot near camp 9 December 1978; the weight of a male from Limuru, Kenya, from January was given as 370 g by BRITTON (1970: 144). Rarely observed in both study areas. Already listed in "Nandi" by JACKSON (in JACKSON 1938: 450) but recorded as irregular visitor only in Kakamega Forest by ZIMMERMAN (1972: 288) and characterised as semi-nomadic making movements to food resources (BROWN & BRITTON 1980) mostly following fruiting of *Ficus*, *Olea* and *Podocarpus* with regular flights known at times.

Family Psittacidae**Red-fronted Parrot, *Poicephalus guilielmi massaicus* (FISCHER & REICHENOW)**

Heard and seen occasionally overhead, mostly at Kamweiga in 1978. Call distinctive.

Brown Parrot, *Poicephalus meyeri saturatus* SHARPE

Not seen by us but recorded by DIAMOND & FAYAD (1979: 96) among the species not associated with the forest.

Family Musophagidae**Ross's Turaco, *Musophaga rossae* GOULD**

One female shot in fruiting fig tree 28 November 1978 weighing 410.0 g; the weight of a male collected 10 December 1978 was not recorded. Only occasionally noted in more open areas and near swamp.

Hartlaub's Turaco, *Tauraco hartlaubi* (FISCHER & REICHENOW)

Two males shot deep in the forest W of Chemisia 1 December 1979 weighed 221.0 and 225.0 g. Not uncommon in North Nandi Forest in 1978 and 1979, present in 1988 as well; we have never seen the Black-billed Turaco (*Tauraco schuettii*) and the Great Blue Turaco (*Corythaeola cristata*) there. Both have been recorded in Kakamega and S Nandi Forests (LEWIS & POMEROY 1989: 220). *T. hartlaubi* has been recorded in "Nandi Forest" at 6000 feet by JACKSON (1902: 628) and was also seen by ZIMMERMAN (1972: 290) "in the higher part of the forest below the Nandi Escarpment".

Family Cuculidae

Red-chested Cuckoo, *Cuculus s. solitarius* STEPHENS

Not recorded by us in 1978 or 1979 but listed by DIAMOND & FAYAD (1979: 96) among species not associated with the forest.

African Emerald Cuckoo, *Chrysococcyx c. cupreus* SHAW

Recorded by DIAMOND & FAYAD (1979: 96) from the edge of the North Nandi Forest. Heard near Chemisia September 1988.

Klaas' Cuckoo, *Chrysococcyx klaas* STEPHENS

Male subad., 26.11.1978, 17.0 g; listed by DIAMOND & FAYAD (1979: 96) among the birds not associated with the forest.

Diederik Cuckoo, *Chrysococcyx caprius* (BODDAERT)

Female subad., 2.12.1979, 24.0 g; record interesting in view of shortage of breeding colonies of *Ploceus* ssp., its normal hosts.

Blue-headed Coucal, *Centropus m. monachus* RÜPPELL

A specimen observed trying to prey on birds from a mist-net in wet area near Chemisia; has already been recorded in "Nandi" by JACKSON (1902: 632).

Family Strigidae

Common Scops-Owl, *Otus s. scops* (L.)

Female, 21.11.1978, 68.0 g, ovaries small. European migrant reaching its southern boundary of wintering area near the equator in Kenya (KEMP in FRY et al. 1988: 116).

African Wood owl, *Ciccaba woodfordii nigricantior* (SHARPE)

Identified by call in eastern part of research area (near Chemisia) in 1979. Common in Kakamega forest.

Red-chested Owlet, *Glaucidium tephronotum elgonense* GRANVIK

Female, 21.11.1978, 100.5 g. Caught in a mist net near forest edge at 10.30 h after having killed a Brown-chested Alethe in this net. No additional specimens later on but identified by its call in 1979. Tape recorded by CvS.

Family Coliidae

Speckled Mousebird, *Colius striatus ugandensis* VAN SOMEREN.

Males 47.5 - 65.0 g, females 52.0 - 64.0 g, a juvenile male shortly afterwards having left the nest caught 28 November 1979 32.9 g, female with yolking egg and more developing caught 24 November 1979 64.0 g, with egg to lay 26 November 1979 63.4 g. Iris white in one ad. male, but usually above pupil yellow, below greenish grey in breeding male (26 November 1979) and in female about to lay (see above), entirely greenish-grey in the juvenile. Stomach filled with earth in adult female with small eggs caught 4 December 1979 in forest near edge.

Regularly at forest edge mainly near cultivations but not found in the interior of the forest or along the main roads crossing the forest but once caught in degraded forest near forest edge and 12 respectively 3 specimens observed in fruiting fig tree near track 4, 22 and 23 November 1978. Speckled Mousebirds west of the Rift Valley attributable to *C. striatus ugandensis* by dark plumage and brighter iris, which is brown in *Colius striatus kikuyensis* usually listed for western Kenya (SCHIFTER 1985).

Family Trogonidae

Narina's Trogon, *Apaloderma n. narina* (STEPHENS)

Two males 28 November and 1 December 1979 68.2 g and 67.0 g, shot in forest near swamp, also seen in 1988. "Female imm." already recorded in "Nandi forest, 6000 ft., Feb. 10, 1898" by JACKSON (1902).

Family Meropidae

Cinnamon-chested Bee-eater, *Merops oreobates* (SHARPE)

Males 26.0 - 28.0 g (7), females 24.0 - 26.5 g (2). Regularly seen usually in higher trees mostly along the main tracks but flying very low and caught in low nets near slopes to small rivers surrounded by higher vegetation; breeding site in forest near Kamweiga occupied in November 1978 but males collected with quite small gonads, female 24 November 1978 with enlarged ovary and small eggs. Stomachs filled with beetles, wasps and occasional remains of other insects. Also seen 1988 near Chemisia. Has already been recorded in "Nandi, 6500 feet", by JACKSON (1902: 620) who collected an immature male in "Nandi Forest" April 10, 1898. Listed by DIAMOND & FAYAD (1979) from the forest edge; uncommon resident in nearby Kakamega Forest where fairly common only near the forest edge, in second growth and in artificially openend forest (ZIMMERMAN 1972: 329).

Eurasian Bee-eater, *Merops apiaster* L.

Migrating birds observed at escarpment in 1978 just outside forest and in open area surrounded by forest remains near Kapsabet in 1979 but never seen in it; 2 females

collected 26 November 1978 46.0 and 46.5 g. JACKSON (1902: 621) had already recorded a small flock at "Nandi, 5500 feet" on April 9, 1898.

Family Coraciidae

Broad-billed Roller, *Eurystomus glaucurus suahelicus* NEUMANN

Male shot in Chepyegoris 6 December 1978 110.5 g, female shot near camp 7 December 1978, both with small gonads; stomach mostly filled with cetonid beetles, one measuring 2.5 cm swallowed whole. Only seen at forest edge and near water perching on prominent trees. Already collected in "Nandi" by JACKSON (1902: 614).

Family Phoeniculidae

White-headed Wood Hoopoe, *Phoeniculus bollei jacksoni* (SHARPE)

Two males 61.8 and 63.0 g, one female 46.2 g, one subadult 49.5 g; male collected 6 December 1979 with enlarged gonads, stomach with insect remains, once identified as beetles. The White-headed Wood Hoopoe has already been listed for "Nandi forest" by JACKSON (1902: 618) when the stomach of a male collected 8 July 1898 also contained beetles; also recorded in 1988.

Family Bucerotidae

Crowned Hornbill, *Tockus alboterminatus geloensis* (NEUMANN)

Male, 25 November 1979, 291.0 g, stomach filled with saturnids, beetles and cycads, but no fruit remains. Only on forest edge and near swamp, 20 September 1988 one pair seen in Kapsabet; already recorded in "Nandi, 6500 feet" as fairly plentiful by JACKSON (1902).

Black-and-white-casqued Hornbill,
Ceratogymna subcylindricus subquadratus CABANIS

Two adult males 1080 and 1275 g, one female 1210 g. Common in both census areas, seen or heard daily, usually on the wing, still present in 1988. Male shot 10 November 1978 not breeding, wing moult, female 1 December 1979 approaching breeding. DIAMOND & FAYAD (1979: 96) have listed it both for the forest and the forest edge; during our stay the birds were mostly observed flying above more or less dense forest but also visiting isolated fruiting trees. *Bycanistes* ssp. have been included in *Ceratogymna* by KEMP & CROWE (1985) who also doubt that *subquadratus* represents a valid subspecies (KEMP in FRY ET AL. 1988: 408). Still regularly seen in 1988. Observations at the escarpment suggest movements between North Nandi and Kakamega Forest, probably for using food resources in both areas.

Family Capitonidae

Grey-throated Barbet, *Gymnobucco bonapartei cinereiceps* SHARPE

4 males, 60.5, 63.0, 64.5 and 67.0 g, gonads small. 1978 in small groups or pairs on fruiting fig trees, mostly high up; also seen near Chemisia in 1988. Already collected by Jackson in the "Nandi Forest, 6000 feet" and noted as being fairly plentiful in thick forests; also "several other individuals seen in an opening in Nandi Forest, where large numbers of trees had been killed by fire" (JACKSON 1902: 635). Recorded in the edge of the forest by DIAMOND & FAYAD (1979: 96). Breeding in Kakamega Forest (ZIMMERMAN 1972).

Yellow-rumped Tinkerbird, *Pogoniulus bilineatus jacksoni* (SHARPE)

Males 11.5 - 14.5 g (4), females 13.0 - 13.1 g (2), male 27 November 1978 with somewhat enlarged gonads, female from the same date small, males 28 & 29 November 1979 near breeding. Stomach contained figs, yellowish and greenish fruits, no insect remains. Also noted in 1988. The Yellow-rumped Tinkerbird has already been recorded as plentiful in "Nandi, 6500 feet" by JACKSON (1902: 635) and was sighted by DIAMOND & FAYAD (1979: 96) and by us in the forest; also inside the forest in Kakamega (ZIMMERMAN 1972:293).

Yellow-spotted Barbet, *Buccanodon d. duchaillui* (CASSIN)

Male 42.0 g, female 40.7 g, male 9 November 1978 with small gonads, female 3 December 1979 with somewhat enlarged ovaries. Occasionally seen mostly high up in fruiting fig trees but less regularly seen than in Kakamega Forest (ZIMMERMAN 1972: 292) and probably visitor to census areas at about 2100 m, as usual range is only to 2000 m (LEWIS & POMEROY 1989: 286).

Double-toothed Barbet, *Lybius bidentatus aequatorialis* (SHELLEY)

Males 80.5 and 81.0 g, female 71.5 g, gonads small (28 November 1978, 26 & 27 November 1979). Regularly seen high up in fruiting fig trees singly or in small groups, not inside the dense forest; listed at the edge of the forest also by DIAMOND & FAYAD (1979: 96). The Double-toothed Barbet has already been recorded in "Nandi, 6500 feet" by JACKSON (1902: 634) who noted the iris as brown, with a greenish or silvery grey outer rim in two females. One of our males had whitish iris, the other and the female dark brown.

Yellow-billed Barbet, *Trachyphonus purpuratus elgonensis* SHARPE

2 males, 73.5 and 78.0 g, female 63.5 g, subad. (not sexed) 65.5 g. Iris in subad. dull red, outer ring pale brown, eye-ring & eyelids yellow, in ad. male & female iris blood red. Only seen singly, usually higher up, once caught in a low net, as recorded in Kakamega Forest by ZIMMERMAN (1972: 293) who had also seen mostly single birds there. BRITTON

(1980: 106) preferred to place this species in the monotypic genus *Trachylaemus* but SHORT & HORNE (in FRY, KEITH & URBAN 1988: 476) & SHORT et al. (1990) included it in *Trachyphonus*. The Yellow-billed Barbet has already been listed by JACKSON (1899) from "Nandi, 6500 ft." where collected July 1 and 5 as well as June 4, 1898. Seen and heard again near Chemisia, September 1988.

Family Indicatoridae

Scaly-throated Honeyguide, *Indicator variegatus* LESSON

1 male, 16 November 1978, 46.5 g. Iris dark umber with small brown outer ring. Caught in net in degraded forest near main road through forest. Already collected at "Nandi, 6500 feet" by JACKSON (1902: 633), also recorded in the forest by DIAMOND & FAYAD (1979: 96).

Greater Honeyguide, *Indicator i. indicator* (SPARRMAN)

Not in the forest; seen only once at the forest edge near Kamweiga. Also listed at the forest edge only by DIAMOND & FAYAD (1979: 96).

Lesser Honeyguide, *Indicator minor teitensis* NEUMANN

1 male, 11 December 1978, 30.0 g, stomach contents: insect & fig remains, gonads somewhat enlarged. Caught in forest near edge; recorded by DIAMOND & FAYAD (1979: 96) in the forest. Earlier, Kenyan birds were mostly included in the nominate subspecies (BRITTON 1980: 107) but SHORT & HORNE (in FRY, KEITH & URBAN 1988: 504) have revalidated *teitensis* for East African birds.

Least Honeyguide, *Indicator exilis pachyrhynchus* (HEUGLIN)

1 male 19 November 1979, 19.5 g, 2 females, 19 & 21 November 1979, 17.0 and 19.0 g. Stomach contents of the female caught 19 November quite a big clump of wax, male with insect fragments in stomach. Gonads small in all specimens. The most common honeyguide in Kakamega Forest (ZIMMERMAN 1972: 294) but already recorded in inside the higher-ranging North Nandi Forest by DIAMOND & FAYAD (1979: 96).

Family Picidae

Fine-banded Woodpecker, *Campethera tullbergi taeniolaema* (REICHENOW & NEUMANN)

4 males 47.5.- 53.0 g, 2 females 43.0 - 49.0 g. Mostly deep in forest, but once collected near Chemisia. Gonads enlarged only in 2 males (8 December 1978 and 4 December 1979), remaining specimens not breeding. Stomach contents: mostly insect larvae, but ants in male of 4 December 1979. Rarely seen, but woodpeckers in North Nandi Forest similarly scarce as in Kakamega Forest (ZIMMERMAN 1972: 295). Already recorded in

"Nandi, 6500 feet" by JACKSON (1902: 639) and observed there by DIAMOND & FAYAD (1979: 6) too.

Cardinal Woodpecker, *Dendropicos fuscescens lepidus* (CABANIS & HEINE)

3 males 25.0 - 26.5 g, 2 females 25.0 g. Gonads small, but in female of 2 December 1979 increasing. *D. f. lepidus* is more a forest bird and has been regarded as specifically distinct by RIPLEY & HEINRICH (1969), see BRITTON (1980: 110) but is listed as belonging to the "lafresnayi-group" within *D. fuscescens* by SHORT (in FRY, KEITH & URBAN 1988: 540). Listed in "Nandi, 6500 feet" as "*Dendropicus simoni* GRANT" by JACKSON (1902: 640) who collected an immature male May 10, 1898. Also recorded in the forest by DIAMOND & FAYAD (1979: 96) and a pair observed 22 September 1988.

Yellow-crested Woodpecker, *Dendropicos xantholophus* (HARGITT)

Male 51.0 g, females 57.5 and 61.5 g. Stomach insect larvae and caterpillars, gonads small especially in the male. Shot high up in tree and caught in tree net. Only rarely seen, our records near upper limit of distribution (SHORT et al. 1990: 139).

Family Eurylaimidae

African Broadbill, *Smithornis capensis meinertzhageni* VAN SOMEREN

Heard and tape recorded in November 1978 in dense, almost impenetrable bush in gully (not seen) by CvS. At the upper limit of its distribution as highland subspecies ascending to 2150 m (SHORT et al. 1990: 139) may explain scarcity in N Nandi Forest at 2100 m where probably not resident. Also listed as uncommon resident in lower Kakamega (ZIMMERMAN 1972: 329).

Family Hirundinidae

Common Sand Martin, *Riparia r. riparia* (L.)

Migrating birds were sometimes observed along rivers just outside the existing forest. Two unsexed specimens obtained from the Kamondi River 16 November 1978 weighed 11.0 and 12.0 g. A locally common to abundant passage migrant, especially in higher rainfall areas but usually found below 1200 m (LEWIS & POMEROY 1989: 315).

Barn Swallow, *Hirundo r. rustica* L.

Migrating birds mostly observed near forest edge in November 1979, where one female (with very small gonads) eventually caught in a net (26 November) weighed 19.5 g.

Black Rough-wing, *Psalidoprocne holomelaena massaica* NEUMANN

Regularly seen, usually in small groups along the Kipsamoiti-Kamweiga road crossing forest in 1978 where one male was found 7 December 1978 weighing 11.5 g with small

gonads. Has been observed several times near Chemisia in September 1988 again; also recorded by DIAMOND & FAYAD (1979: 96) among the birds not associated with forest. *P. holomelaena* has been included in *P. pristoptera* (BRITTON 1980) but *P. holomelaena* better regarded as allospecies in superspecies *pristoptera* (SHORT et al. 1990: 146).

Family Motacillidae

Yellow Wagtail, *Motacilla f. flava* L.

Only one female weighing 16.0 g collected at escarpment 26 November 1978, belongs to the nominate subspecies which is common and widespread in the highlands of Kenya during the winter months (BRITTON 1980).

Gray Wagtail, *Motacilla c. cinerea* TUNSTALL

One female weighing 15.5 g shot 28 November 1978 along track in forest; in 1979 two males weighing 15.5 and 16.0 g near small stream deep in forest where an unsexed specimen was found dead 22 November 1979 weighing only 14.5 g. Also seen sometimes near temporary water along tracks in the forest in both years; uncommon occurrence in Kenyan highlands from September to March (SHORT et al. 1990).

African Pied Wagtail, *Motacilla aguimp vidua* SUNDEVALL

Only one male weighing 24.5 g mist-netted 24 November 1979 inside the forest; rarer than might be expected in the forest with quite a number of small streams and wet forest clearings where usually common (BRITTON 1980). Gonads small; recorded in "Nandi" by JACKSON (1899).

Plain-backed Pipit, *Anthus leucophrys zenkeri* NEUMANN

Only one male weighing 29.5 g shot in open area near swamp at forest edge 28 November 1979 near upper limit of distribution indicated as 2200 m (SHORT et al. 1990). Specimen does not approach *A. l. goodsoni* as mentioned as intergrading with this subspecies in "Kakamega" by BRITTON (1980).

Family Campephagidae

Grey Cuckoo Shrike, *Coracina caesia pura* (SHARPE)

Male 41.5 g (13 December 1979), female 44.5 g (28 November 1978). Rarely seen in canopy of forest in both study areas and noted again near Chemisia in September 1988. Collected in 1898 by Jackson in "Nandi, 6500 feet" (JACKSON 1901: 85) but listed as scarce in Kakamega (TENNENT 1965: 99) and then as rare visitor later on (ZIMMERMAN 1972: 329).

Family Pycnonotidae

Common Bulbul, *Pycnonotus barbatus fayi* MEARNS

Males 38.5 - 41.0 g, females 33.5 - 43.1 g, but one mist-netted and ringed specimen 44.0 g, wing males 97.0 - 101.0 mm, females 93.0 - 98.0 mm. Usually found at forest edge, in clearings and along main road in forest only, seen again at forest edge near escarpment in 1988. Listed in "Nandi, 6500 feet" among *Pycnonotus layardi* as "plentiful everywhere throughout Nandi" by JACKSON (1901: 85) and recorded in Kakamega too but not listed as forest bird (ZIMMERMAN 1972). *P. b. fayi* recently included in *P. b. tricolor* (HARTLAUB) again (ZIMMERMAN et al. 1996).

Shelley's Greenbul, *Andropadus masukuensis kakamegae* (SHARPE)

Males 21.0 - 26.0 g, females 21.5 - 26.5 g, wing males 70.0 - 84.5 mm, females 78.0 - 79.0 mm. Stomach contents: tiny insects, small seeds. Gonads small. Already listed by DIAMOND & FAYAD (1979) but probably not common; quite rarely caught in mist-nets, probably due to occurrence from the undergrowth up to the canopy of trees (ZIMMERMAN 1972: 302).

Plain Greenbul, *Andropadus c. curvirostris* (CASSIN)

Males 24.0 - 26.5 g, wing 81.0 - 83.0 mm, female 24.0 g, wing 75.0 mm, one unsexed specimen 26.5 g, a juvenile male (23 November 1978) only 21.0 g, wing 73 mm. ZIMMERMAN (1979: 304) gave quite a range of weights, between 20 and 29 g. Iris chestnut to rusty brown, immature dark brown. One male with only right gonad collected 21 November 1979. Stomach contents: insect remains and caterpillars. Quite rarely mist-netted near the ground because probably forages in higher shrubs and tangles of vines, though rarely recorded above 10 m (TURNER & ZIMMERMAN 1979); one specimen ringed in Kakamega in 1966 recaptured there twenty years later (ZIMMERMAN 1986).

Yellow-whiskered Greenbul, *Andropadus latirostris eugenius* (REICHENOW)

Males 25.2 - 33.5 g, females 23.0 - 28.0 g, immature male and female 25.0 g, but sub-adult specimens (still without malar streaks) 27.0 and 33.0 g; unsexed (immature) specimens 22.0 - 24.9 g, 21 mist-netted specimens (ringed 1978) 23.5 - 31.0 g, 112 mist-netted specimens ringed in 1979 25.0 - 33.0 g; wing males 83.0 - 92.0 mm, females 82.0 - 90.0 mm. Stomach contents: mostly fruits, sometimes insects; quite often recorded as empty probably because of quick digestion of preferred fruits. The most common of all greenbuls, often ranging in small groups which may be caught together in low placed mist-nets but quite rarely seen passing the tracks. Juvenile specimens captured in November 1978, rarer in 1979. Ringed specimens often retrapped in same net and even returning to site of ringing within short time when released at a distance of \pm 1 km. In Kakamega Forest, ringed specimens were recaptured near tract more than three years after they had been ringed (ZIMMERMAN 1972: 279). Already listed in "Nandi, 6500 feet" by JACKSON (1901: 84). Now regarded as not distinguishable from nominate subspecies (KEITH et al. 1992).

Slender-billed Greenbul, *Andropadus gracilirostris chagwensis* (VAN SOMEREN).

Males 27.0 - 31.0 g, wing 83.0 - 87.0 mm. Stomach contents: remains of greenish beetles. Only males have been secured in the forest canopy, but one female has been collected in North Nandi Forest by V.C.FAYAD and A.W.DIAMOND, 8 January 1978 (specimen in NMK, reg. no. 17.207, wing 88.0 mm). Slender-billed Greenbuls show a marked preference for the canopy and upper levels of tall fruiting trees (TURNER & ZIMMERMAN 1979) which may explain their scarcity in the collection. Males collected in 1978 were not breeding, but another male taken 8 December 1979 had large gonads probably just after breeding. In Kakamega Forest, a female had an egg nearly ready for laying June 18 and a few days before an immature bird was trapped there (ZIMMERMAN 1979: 303). Already recorded in "Nandi, 6500 feet" by JACKSON (1901: 83). BRITTON (1980: 129) has listed the Kenyan Slender-billed Bulbuls as belonging to the highland race *A. g. percivali* which intergrades with the western *congensis* in W Kenya but ZIMMERMAN (1972: 303) has identified specimens from Kakamega forest as *A. g. chagwensis*, which is also recognised as the subspecies of western Kenya between the range of *A. g. congensis* and *A. g. percivali* by RAND (1960).

Olive Greenbul,

Phyllastrephus cabanisi nandensis CUNNINGHAM-VAN SOMEREN & SCHIFTER

Males 22.5 - 32.5 g, females 19.8 - 29.5 g, 6 unsexed specimens ringed and released (1978) 21.0 - 29.0 g, 29 specimens mist-netted and ringed in 1979 19.8 - 29.0 g. Wings males 78.0 - 85.0 mm (mean 80.4 mm), females 70.0 - 77.0 mm (mean 76.2 mm). Stomach contents: moths, beetles, unidentified insect fragments, fruits, once a large caterpillar, snails as an exception. Gonads mostly small, sometimes increasing; in Kakamega Forest ZIMMERMAN (1972) recorded large testes in June and a juvenile bird in July. Quite common in both studies, including smaller subadult birds but less common than *Andropadus latirostris*. DOWSETT (1972) has summarized the reasons why *P. placidus* should be split from lowland Fischer's Greenbul (*P. fischeri*) which ranges entirely below 500 m; therefore *P. placidus*, which has more recently been merged into *P. cabanisi* (DOWSETT-LEMAIRE 1989), remains a highland species ranging from 1000 - 2700 m (SHORT et al. 1990: 154). The Olive Bulbuls of western Kenya were previously included in *P. (f.) sucosus* REICHENOW being named from Bukoba on the western shore of Lake Victoria; *P. (placidus) nandensis* has been separated by its green back from *P. p. sucosus* which has a brownish wash (CUNNINGHAM-VAN SOMEREN & SCHIFTER 1981). Olive Bulbuls from Nguruman Range are similar to those from Nandi Forest but are not so bright on the ventral surface and the breast band is not so pronounced; they have been named *P. (placidus) ngurumanensis* by us (1981).

Common Bristlebill,

Bleda syndactyla nandensis CUNNINGHAM-VAN SOMEREN & SCHIFTER

Males 45.2 - 48.0 g, females 41.0 - 45.5 g. Iris in males chestnut, in females brown with a slight reddish tinge. Stomach contents: ants and insect fragments, mostly beetles. Rarely seen and mist-netted, usually alone, following driver ants. Female coming to breed 18 November 1979. Bristlebills are reaching their upper limit of distribution in

North Nandi Forest (Fig. 7) and are quite rare; they have been separated from specimens from Kakamega Forest and lower-lying locations in Uganda by their larger size (CUNNIGHAM-VAN SOMEREN & SCHIFTER 1981). Bristlebills from Kakamega were listed earlier as belonging to the western subspecies *B. s. woosnami* (ZIMMERMAN 1972: 300).

Family Prionopidae

Pink-footed Puffback, *Dryoscopus angolensis nandensis* SHARPE

Male 32.0 g, shot 14 December 1979. Gonads enlarged, stomach contents: caterpillars and beetles. Not seen before in forest or near Kamweiga in 1978 but observed 24 September 1988 at forest edge near escarpment at Chemisia, which may be due to the fact that it is a tree-top species also listed as uncommon in Kakamega Forest (ZIMMERMAN 1972: 316). *D. nandensis* SHARPE based on an adult male collected by Jackson in "Nandi, 6500 feet" June 29, 1898 (see also JACKSON 1901: 41, date misprinted "1892" in WARREN & HARRISON 1971: 371); known from a few other localities in western Kenya only (SHORT et al. 1990: 156).

Brown-crowned Tchagra, *Tchagra australis emini* (REICHENOW)

Males 28.9, 35.0 and 36.5 g, females 40.5 and 41.5 g; recorded only from forest edge or at clearings. Listed in "Nandi, 6500 feet" by JACKSON (1901). Recorded in Kakamega where "not in the proper forest but noted in an open pine plantation" (TENNENT 1965: 100).

Luehder's Bushshrike, *Laniarius luehderi castaneiceps* SHARPE

Males (37.0) 38.5 - 47.0 g, females (34.0) 37.0 - 47.5 g, subadult females 37.2 - 39.0 g. Female mist-netted 20 11 1979 together with male weighing only 38.5 g near breeding; males also with enlarged gonads. Juvenile specimen (not sexed) weighing 41.0 g collected 14 November 1978. ZIMMERMAN (1972: 316) has listed a male from Kakamega Forest which weighed 48 g. Quite common in undergrowth and also recorded near Chemisia in 1988 - wing moult in male mist-netted 21 September. Already collected by Jackson in "Nandi, 6500 feet" in 1898 (JACKSON 1901: 41) in "thick bush in forest-belts". Recorded in Nandi from the forest and also from the forest edge (DIAMOND & FAYAD 1979); common in Kakamega too (TENNENT 1965: 99) and found there "wherever there are thick tangles of brush and vines in which it skulks" (ZIMMERMAN 1972: 316). Listed by ZIMMERMAN as *L. l. luehderi*, but *L. l. castaneiceps* recognised in the review of the species by MOLTONI (1933) and later on.

Tropical Boubou, *Laniarius ferrugineus major* (HARTLAUB)

Males 56.0 and 60.0 g, female 52.0 g. Only found near swamp and at forest edge where also recorded in 1988. Several specimens collected by Jackson in "Nandi, 6500 feet" but there also "Nandi, 8700 feet, Aug. 3, 1896" the recorded altitude obviously being a misprint JACKSON (1901: 37).



Fig. 7: Nandi Forest subspecies of Common Bristlebill *Bleda syndactyla nandensis*, 26 November 1978 (Photo: H. Schifter).

Doherty's Bush-Shrike, *Malaconotus dohertyi* (ROTHSCHILD)

Male, 29 November 1979, 38.0 g, stomach contents: cicada, beetles. Has been heard 26 11 1979 along track near to forest edge where recorded in 1988 too. Not observed there by DIAMOND & FAYAD (1979). Also listed as rare visitor only in Kakamega Forest (ZIMMERMAN 1972: 329). The type locality "Nandi Escarpment" was given erroneously by Rothschild when describing the species and has been corrected to Kikuyu Escarpment by Hartert (see SCLATER 1930).

Family Laniidae

Common Fiscal, *Lanius collaris humeralis* STANLEY

Male, 36.1 g, 27 November 1979. Only recorded in forest edge near cultivation in former forest with remains of trees burnt down and partly deserted bomas. Has been recorded in "Nandi, 6500 ft." where a juvenile male was collected by JACKSON (1901) indicating that his locality "Nandi" included open woodland and cultivated areas.

Mackinnon's Fiscal, *Lanius mackinnoni* SHARPE

Males 33.5 - 37.0 g, females 34.0 - 36.0 g, subadult female 34.5 g. Recorded in forest edge or clearings but though it does not enter the forest it seems to be associated inva-

riably with clearings in forested country and never in open savannas (ZIMMERMAN 1972: 326); in Kakamega probably nesting in an area of secondary forest (TENNENT 1965: 99). Has already been recorded in "Nandi, 6500 feet" by JACKSON (1901) without comment on habitat. Classified as lowland forest species (ZIMMERMAN 1972: 335); not seen in same localities as Common Fiscal which has been recorded outside of forest only.

Family Turdidae

White-starred Robin, *Pogonochla stellata intensa* SHARPE

2 ad. males 20.5 g, wing 77.0 and 84.0 mm, 2 ad. females 20.0 and 20.5 g, wing 78.0 and 79.0 mm, subadult male 19.0 g, 2 subadult females 17.0 and 20.0 g, an unsexed juvenile, mist-netted 17 November 1978 near swampy area in forest, 18.0 g. Rarely found but juvenile and subadult specimens confirm breeding in forest. Differing by black and yellow tails from subspecies *P. s. elgonensis* ranging next to N Nandi (CUNNINGHAM-VAN SOMEREN & SCHIFTER 1981). MOREAU (1951) identified the Forest Robins from the Kenya Highlands as *P. s. keniensis* MEARNs which was synonymized with *P. s. guttifer* (REICHENOW & NEUMANN), type locality Kifinka, Mt. Kilimanjaro by RIPLEY (1964). Also *P. s. intensa* SHARPE, type locality Mau (but substituted by N'dabibi, at the south end of the Mau range with coordinates 0.44° S, 36.16° E by CUNNINGHAM-VAN SOMEREN, 1981), synonymized with *P. s. guttifer* by RIPLEY (1964) whereas BRITTON (1980: 143) admitted *P. s. intensa* for most highland areas and *P. s. elgonensis* for Mt. Elgon only (see also FRY et al. 1992).

Equatorial Akalat, *Sheppardia aequatorialis pallidigularis* CUNNINGHAM-VAN SOMEREN & SCHIFTER

Males 14.0 - 17.0 g (mean 15.5 g), females 11.0 - 16.5 g (mean 14.8 g), subadult males 13.9 - 16.0 g, subadult females 13.0 - 16.0 g, 24 specimens ringed in 1978, 13.0 - 17.0 g, 69 adult specimens ringed 1979, 13.3 - 18.0 g, 10 subadult specimens ringed 1979 13.5 - 15.6 g, 11 adult specimens mist-netted and released during September 1988 14.0 - 17.0 g. Though many subadult specimens have been recorded, their gonads have usually been small or only slightly enlarged, the breeding season obviously having passed; in Kakamega Forest, juvenile birds have been recorded as early as June (ZIMMERMAN 1972: 310); stomach contents: insect fragments. Very common in undergrowth in study area, mostly deep in the forest, less common near Chemisia in 1979. Big gonads and many subadult birds indicate breeding from October to December in study area but no subadult birds were found in September 1988.

S.a.pallidigularis separated from specimens from other localities in Kenya, representing nominate subspecies by being more "golden-yellow" rather than brown, with a conspicuous pale throat. Specimens from nearby Kakamega where the Equatorial Akalat also is very common (ZIMMERMAN 1972: 310) are darker without the distinct pale throat. Both populations included in the nominate subspecies by FRY et al. (1992).

Gray-winged Akalat, *Sheppardia p. polioptera* REICHENOW

Female 19.9 g. Only one adult female mist-netted in track near forest edge 29 November 1979. Study area higher in altitude than recorded upper limit of 2000 m (BRITTON 1980) but isolated record may indicate that North Nandi Forest will be visited only occasionally. Formerly included in *Cossypha* or *Dryocichloides* but hesitantly placed in *Sheppardia* (SHORT et al. 1990: 163); listed in *Cossypha* again more recently by FRY et al. (1992).

Brown-chested Alethe,

Alethe poliocephala nandensis CUNNINGHAM-VAN SOMEREN & SCHIFTER

25.5 - 32.5 g (mean 27.8 g), females 26.0 - 31.0 g (mean 28.5 g), subadult males 27.0 - 28.0 g, subadult females 24.0 - 28.0 g, juvenile males 26.0 - 29.0 g, 8 unsexed specimens ringed 1978, 25.0 - 30.0 g, 48 mist-netted specimens ringed 1979, 23.0 - 31.3 g, 9 unsexed specimens ringed in September 1988, 27.5 - 34.0 g. Wing males 80.5 - 91.0 mm (mean 86.0 mm), females 82.0 - 90.0 mm (mean 84.83 mm). Stomach contents: caterpillars, beetles, unidentified insect fragments and snails. Very common in undergrowth inside of the forest, sometimes near forest edge. Gonads mostly small or not very enlarged, therefore probably just after breeding in November and December in both study areas with many juveniles in speckled plumage or subadult specimens with still some speckles; in Kakamega Forest, immatures have been recorded from June to August (ZIMMERMAN 1972: 311). Sometimes retrapped either in the same net (one five days after being ringed), another which was ringed 5 December 1979 was retrapped the next day at a distance of 150 m. A female ringed by us near Chemisia as an adult bird on 23 November 1979 was recaptured only about 100 m from the original site on 21 September 1988, weighing 30.0 g as nearly nine years before (GICHUKI & SCHIFTER 1990). The Brown-chested Alethe of the N Nandi Forest has been separated from the western *A. p. carruthersi* by the pronounced Brussels Brown of the back and from the more eastern *A. p. akeleyae* by its lack of a marked chestband. The birds from Kakamega Forest were previously listed as *A. p. carruthersi* by ZIMMERMAN (1972: 311).

Common Robin-Chat, *Cossypha caffra iolaema* REICHENOW

Male 30.0 g. Recorded only once 10 December 1979 near swamp outside of forest, thus showing no overlap in distribution with closely related species of *Cossypha*; neither listed by JACKSON (1901) or by DIAMOND & FAYAD (1979) in Nandi, nor by TENNENT (1965) and ZIMMERMAN (1972) for Kakamega Forest.

Blue-shouldered Robin-Chat,

Cossypha cyanocampter pallidiventris CUNNINGHAM-VAN SOMEREN & SCHIFTER

Males 27.0 - 32.0 g (mean 29.3 g), females 24.4 - 30.5 g (mean 27.2 g), mist-netted specimens 24.5 - 26.0 g, subadults 24.5 - 30.0 g, a juvenile female mist-netted 22 November 1978 26.5 g. Wings males 81.0 - 85.0 g, females 73.0 - 79.0 mm. Gonads small or slightly enlarged, not breeding at time of research. Stomach contents: beetles, snails, also grit or

small stones. Rarely seen but quite often heard singing and imitating immediately other voices including human whistles; probably quite common in North Nandi Forest, representing an eastward extension in altitude (+/- 2100 m in study area). Juvenile female mist-netted 22 November 1978 and subadults taken during November and December 1979 clearly confirm suggested breeding in study area. Also recorded in Nandi by DIAMOND & FAYAD (1979). Differ by being paler but yellower underneath than western subspecies *C. c. bartteloti* SHELLEY listed in Kakamega Forest (ZIMMERMAN 1972: 310) where included by FRY et al. (1992).

Heuglin's Robin-Chat, *Cossypha h. heuglini* HARTLAUB

Male 43.3 g, subadult female 38.9 g. Both mist-netted at the forest edge 26 and 28 November 1979 and not found within the forest in accordance with known ecological preferences (POMEROY & LEWIS 1989). Jackson's specimens labelled "Nandi, 6500 feet" definitely must have been collected outside of forest as well.

Snowy-crowned Robin-Chat, *Cossypha niveicapilla* (LAFRESNAYE)

Male, 41.0 g. Only specimen mist-netted 22 November 1978 by stream in the forest. Scarcity in study area probably due to representing upper limit of distribution as mainly recorded at 1500 - 2000 m (BRITTON 1980). Already collected in "Nandi, 6500 feet" ("*C. melanonota*") by JACKSON (1901: 71) and recorded in N Nandi too by DIAMOND & FAYAD (1979) reaching its upper limit of distribution at about 2000 m in Kenya (SHORT et al. 1990: 166).

White-tailed Ant Thrush,

Neocossyphus poensis nigradorsalis CUNNINGHAM-VAN SOMEREN & SCHIFTER

Males 50.0 - 56.0 g, females 46.5 - 55.0 g, one subadult male 51.2 g (1 December 1979), one unsexed specimen ringed 25 September 1988, 48.5 g. Gonads small, slightly enlarging December 1978, only one male near breeding on 20 November 1979. Stomach contents: ants, insect fragments. Uncommon in North Nandi Forest and only found solitarily in wetter parts near streams or swamps, probably due to upper limit of distribution, but also recorded as rare in Kakamega Forest, where doubtfully assigned to the more western subspecies *N. p. praepectoralis* on the basis of a specimen identified as belonging to this subspecies by FRIEDMANN (1966, see also ZIMMERMAN 1972: 310). Nandi birds separated as *N. p. nigradorsalis* (Fig. 8) and Kakamega birds as *N. p. kakamegoes* recently (CUNNINGHAM-VAN SOMEREN & SCHIFTER 1981). Already recorded in N Nandi by DIAMOND & FAYAD (1979).

Common Stonechat, *Saxicola torquata axillaris* (SHELLEY)

Males 14.0 - 16.0 g. Only found outside of the forest near Kamweiga in 1978 and at the escarpment overlooking Kakamega Forest in 1988; also near the swamp. One subadult male collected 15 December 1978, immature female also taken 4 July 1896 at "Nandi, 6500 ft." by JACKSON (1901).



Fig. 8: White-tailed Ant-Trush *Neocossyphus poensis nigradorsalis*, North Nandi Forest W Chemisia, September 1988 (Photo: H. Schifter).

Anteater Chat, *Myrmecocichla aethiops cryptoleuca* SHELLEY

Males 56.0 - 68.0 g, females 49,5 - 50,0 g, only seen at forest edge near escarpment and in cultivation. Listed in "Nandi, 6500 ft." by JACKSON (1901) as being "fairly plentiful in Nandi. Confined to open ground, where it may be sitting on some bush, dead twig, or ant-heap".

Cliff-Chat, *Myrmecocichla cinnamomeiventris subrufipennis* (REICHENOW)

A pair noted 24 September 1988 at escarpment on large rocks above cultivation just below forest edge. Not seen at the grass-covered escarpment at Kamweiga.

Northern Olive Thrush, *Turdus olivaceus porini* CUNNINGHAM-VAN SOMEREN & SCHIFTER

Males 58.0 - 67.0 g, females 57.0 - 65.5 g. Uncommon in study area and usually found near forest edge and along streams. Distinguished from other populations in Kenya (considered to represent the nominate subspecies of *T. abyssinicus* by BRITTON 1980 which is now usually merged with *T. olivaceus* (SHORT et al. 1990) and even distinguished from nearby ranging *T. a. elgonensis* - not generally acknowledged - by darker back and chest) but subspecies name *fuscatus* preoccupied and replaced by *porini*. The dark colour of back and breast was already obvious in a specimen collected 21 June 1898 in "Nandi, 6500 ft." by F.J. JACKSON (see JACKSON 1901) which is still preserved in the FMNH. The

Kenyan populations of *T. olivaceus* are widely separated from more northern *T. abyssinicus* with much paler birds in isolated forest islands between (Mt. Marsabit, *T. a. polius* MEARNs and Mt. Loima, *T. a. mwaki* CUNNINGHAM-VAN SOMEREN & SCHIFTER 1981) which are also included in *T. abyssinicus* by KEITH & URBAN (1992). Moreover, *T. abyssinicus* has been merged with *T. olivaceus* recently (SHORT et al. 1990: 172, URBAN ET AL. 1997).

Family Timaliidae

Gray-chested Illadopsis, *Kakamega poliothorax* (REICHENOW)

Males 32.0 - 38.3 g, females 33.0 - 35.5 g, subadult male 34.0 g, one unsexed specimen 31.8 g. Iris bright chestnut to reddish brown, legs bluish grey, upper mandible dark horn, lower mandible whitish. Stomach contents: insects, snails, small fruits and seeds, also grit. Not uncommon in undergrowth in North Nandi Forest, where it ascends higher than recorded by MANN (1980) and MANN et al. (1978) who found it in Kakamega and South Nandi Forests at altitudes of 1560 - 1700 m. Rudolf Grauer has collected two specimens in the forest west of the northern end of Lake Tanganyika during March 1910 in 2000 m (SASSI 1916) and it has been recorded in eastern Zaire up to 8000 ft (CHAPIN 1953). Suggested to be of turdine affinities, but an immature specimen already collected by Grauer shows no light spotting at all (CHAPIN 1953). Also our only specimen marked as subadult (mist-netted 15 November 1978) with a wing length of only 75.0 mm (compared to 77.0 - 84.0 mm in adults) shows no sign of possibly spotted juvenal plumage. Formerly included in *Alethe* (SCLATER 1930, JACKSON 1938), but later on transferred to Timaliinae where listed among *Trichastoma* (DEIGNAN 1964) and more recently separated as *Kakamega* (MANN et al. 1978; RIPLEY & BEEHLER 1985).

African Hill Babbler,

Illadopsis abyssinica poliothorax (CUNNINGHAM-VAN SOMEREN & SCHIFTER)

Males 15.5 - 20.5 g (only one male 23.0 g), females 16.5 - 20.0 g, subadult males 18.5 - 19.0 g, a female with yolking egg collected 18 November 1978 21.0 g, 23 mist-netted and ringed specimens 17.5 - 20.5 g. Wing males 62.0 - 71.0 mm (mean 66.4 mm), females 63.0 - 68.0 mm (mean 65.3 mm). Iris brown with a reddish tinge to bright chestnut, feet greenish gray, upper mandible greenish horn, lower paler grey. Stomach contents: insects, even cicada, rarely fruits. Very common in forest undergrowth, often deep in the forest, mostly mist-netted early in the morning or in the evening; a female with yolking egg 18 November 1978, males often with enlarged gonads, but in November 1978 many in non-breeding status as well, probably representing subadults from the same year. There are few breeding records from East Africa, but in the Kikuyu Escarpment Forest a female with a developing egg was trapped 17 November and females with oviduct eggs were found later in December and January (TAYLOR & TAYLOR 1988).

Distribution in eastern Africa between 1500 and 3000 m (SHORT et al. 1990: 173), but a montane species which is probably a only rare visitor in lower-lying Kakamega Forest (ZIMMERMAN 1972: 323) which suggests a genuine altitudinal difference as TENNENT

(1965: 97) has seen only one *I. abyssinica* in the higher eastern part of Kakamega Forest at 5600 feet. Jackson collected specimens at 6500 ft. at "Nandi" during May 1898 and even lower at 6000 ft. only in Mangiki on the slope of Mt. Elgon 2 August 1900 (JACKSON 1901). Also specimens from the Meru Forest on the northeastern slope of Mt. Kenya have been noted to occur there at 5300 ft. only (VAN SOMEREN collection in FMNH) and in Magamba in the Usambara Mountains Hill Babblers have been taken as low as 5200 ft. (CONOVER-EVERARD African Expedition 1926, specimens in FMNH). Nevertheless, the distribution of *I. abyssinica* is discontinuous in eastern Africa with obviously separated populations in the mountain islands. Therefore the African Hill Babblers from North Nandi Forests have been separated from nominate subspecies by paler ventral surface as *I. a. poliothorax* and the still paler population from Mt. Loima in W Turkana as *I. a. loima* (CUNNINGHAM-VAN SOMEREN & SCHIFTER 1981). Removed from *Alcippe* and placed in *Illadopsis* more recently (RIPLEY & BEEHLER 1985: 498).

Mountain Illadopsis, *Illadopsis pyrrhopterum* (REICHENOW & NEUMANN)

Males 22.0 - 30.0 g, females 20.0 - 25.5 g, subadult females 21.0 - 22.0 g, 41 mist-netted and ringed specimens including subadults 20.0 - 30.0 g. Wing males 67.5 - 72.0 mm, females 66.0 - 69.0 mm, in subadults 65 - 66 mm. Subadult females collected 16 and 23 November 1978, reddish brown on the back and much more reddish on the wings. Stomach contents: caterpillars and insect fragments. Common in undergrowth and mostly caught near ground early in the morning or in the evening. Probably much more common in Nandi forest than in lower-lying Kakamega forest, where only seen rarely and identified as belonging to the nominate subspecies (ZIMMERMAN 1972: 298) but *T. p. kivuensis* barely recognisable even compared with large series taken by Grauer in eastern Zaire in NMW. Listed in *Trichastoma* by DEIGNAN (1964) but African species have been placed in *Illadopsis* together with *Alcippe abyssinica* more recently (SHORT et al. 1990).

Scaly-breasted Illadopsis, *Illadopsis albipectus barakae* (JACKSON)

Males 27.5 - 33.0 g, females 25.0 - 30.5 g, wing (both sexes) 70.0 - 74.0 mm. Iris greyish-brown, feet pinkish flesh, upper mandible dark horn, lower mandible whitish horn. Gonads small, resting, slightly increasing toward end of study period. Stomach contents: caterpillars, beetles and other insects, rarely snails, fruits such as figs an exception. Common in undergrowth and following driver ants. Activity crepuscular, as also recorded in Kakamega Forest by ZIMMERMAN (1972: 298) and also caught usually at dusk, but inside the forest during the day too. Rarer in study area more to the south near Chemisia in 1979, where rarely recorded in 1988 too probably because the nets were fixed well above ground.

No specimens of *I. rufipennis* have been found in North Nandi Forest whereas it is known from the lower lying South Nandi Forest and Kakamega (where it is the most numerous species, see ZIMMERMAN 1972, RIPLEY & BEEHLER 1985). Also *I. fulvescens* was absent in North Nandi Forest (see also MANN 1980).

Family Sylviidae

Black-faced Rufous Warbler, *Bathmocercus rufus vulpinus* REICHENOW

Males 15.0 - 19.2 g, females 13.0 - 18.9 g (34 males and only 19 females including those ringed and released near Chemisia in 1988). Smaller number of females might suggest breeding, but gonads only medium-sized. Stomach contents: caterpillar, small cycad and insect fragments. Not rare, but crepuscular and mostly deep in the forest and in dense undergrowth often near streams and wet areas, but not restricted to these as already pointed out for Kakamega Forest by ZIMMERMAN (1972: 314). Also listed among the forest species in Nandi by DIAMOND & FAYAD (1979).

African Yellow Warbler, *Chloropeta natalensis massaica* FISCHER & REICHENOW

Female, 12.0 g. Only one specimen was mist-netted in the swamp at the forest edge 3 December 1979. Already collected by JACKSON in "Nandi, 6500 feet" April 22, 1898 but "Evidently a rare bird, as only two others have been observed; one near the fort, the other near the marsh, where the first was obtained" (JACKSON 1901: 91-92).

Singing Cisticola, *Cisticola cantans pictipennis* MADARASZ

Male, 16.0 g. Only one specimen mist-netted in Kamweiga at the escarpment near the forest. Widely distributed in western Kenya below 2500 m from Mt. Elgon southwards (SHORT et al. 1990).

Chubb's Cisticola, *Cisticola c. chubbi* SHARPE

Males, 15.0 - 18.8 g, females, 13.5 - 18.5 g, 12 specimens mist-netted and ringed 1979 14.3 - 20.0 g. Iris reddish-brown in most specimens, gonads slightly enlarged or increasing. The only resident *Cisticola* of the study area, quite common in wetter and disturbed parts of the forest, mostly alongside clearings in grassy vegetation, wandering about in small family parties. Ovaries and gonads often enlarged. Already noted in "Nandi, 6500 feet" by JACKSON who noted it as "very plentiful in the bush and thick vegetation at the edge of forest belts. Extremely noisy" (JACKSON 1901: 62). Only recorded in clearings in Kakamega Forest (ZIMMERMAN 1972: 313) indicating that Nandi forest is already more degraded now.

Levaillant's Cisticola, *Cisticola tinniens oreophila* VAN SOMEREN

Male, 14.0 g. Only one specimen mist-netted in Chepyegoris near forest and not recorded in forest but listed in "Nandi, 6500 feet" by JACKSON (1901: 63).

Tawny-flanked Prinia, *Prinia subflava melanorhyncha* (JARDINE & FRASER)

Male, 8.5 g. Only one male mist-netted at the escarpment near the forest edge, 4 December 1978; also seen 24 September 1988 at escarpment W Chemisia. Two specimens in "Nandi, 6000 feet" listed by JACKSON (1901) as "*Prinia mystacea*" (= *Prinia subflava*).

White-chinned Prinia, *Prinia leucopogon reichenowi* (HARTLAUB)

Males 11.5 - 15.5 g, females 11.0 - 14.0 g, 4 specimens ringed 2 - 4 December 1979, 13.2 - 14.0 g. One female with yolking eggs near Chemisia 21 November 1979. Quite common but usually nearer to forest edge and in clearings, indicating disturbed status of North Nandi Forest. Recorded in Kakamega Forest where it is also a bird of the forest border and brushy second growth (ZIMMERMAN 1972: 313). Noted already as being "very plentiful in thick brush and among the small trees in forest belts" in "Nandi, 6500 feet" by JACKSON (1901: 64).

Banded Prinia, *Prinia bairdii melanops* (REICHENOW & NEUMANN)

Males 13.0 - 15.0 g, females 11.0 - 17.0 g, subadult specimen 11.1 g, 33 specimens mist-netted and ringed 1979, 11.8 - 16.0 g, 8 specimens mist-netted and ringed 1988, 12.0 - 16.5 g. The unusually heavy female (17 g) mist-netted 26 November 1978 had medium-sized ovaries and an empty stomach. Ovaries enlarging and with eggs about to yolk in November 1979. Stomach contents: ant pupae and insect fragments. In undergrowth and secondary growth in disturbed forest, roaming around in family parties, wary, habitat similar to Kakamega (ZIMMERMAN 1972: 314). Most plentiful *Prinia* species in the study area, also in 1988 near Chemisia, where specimen ringed 23 November 1979 (ring no. J 103.080) was retrapped only 150 m far from the original site 22 September 1988 and released; weight recorded in 1979 14.0 g, 13.0 g in 1988 (GICHUKI & SCHIFTER 1990). Ringing site was nearer to the forest edge, which has been somewhat more disturbed than in 1979; birds moving obviously slightly into the forest. Only once seen and collected by JACKSON in "Nandi forest, 6000 feet" April 10, 1898 "in thick undergrowth" (JACKSON 1901: 64).

Black-collared Apalis, *Apalis p. pulchra* SHARPE

Males 9.5 - 12.0 g, females 9.0 - 11.5 g, 18 specimens ringed and released 1979, 8.5 - 12.2 g. Gonads firm, female with yolking egg 26 November 1978, also breeding November 1979. More commonly found in undergrowth near clearings and forest edge, rarely in the denser parts of the forest; wary. Males are more often seen and mist-netted. Also recorded at the forest edge by DIAMOND & FAYAD (1979), whereas listed among montane forest species in Kakamega by ZIMMERMAN (1972: 335). Collected by Jackson in "Nandi, 6500 feet" and noted as "fairly plentiful in thick vegetation and bushes in belts of forests" (JACKSON 1901: 67).

Buff-throated Apalis, *Apalis rufogularis nigrescens* (JACKSON)

Male, 8.2 g, subadult male 10.0 g. Rarely seen near ground, more often observed near forest edge and small stream (subadult specimen indicates breeding in the area) but seen again 23 September 1988 near Chemisia, where a family party was feeding its young. One male collected in Nandi Forest 26 November 1976 in NMK (reg. no. 16348/917); also recorded in the North Nandi Forest in January 1978 by DIAMOND & FAYAD (1979). Listed as forest edge species from Mt. Elgon (BRITTON & SUGG 1973).

Buff-bellied Warbler, *Phyllolais pulchella* (CRETZSCHMAR)

Only once observed at forest edge on escarpment overlooking Kakamega Forest W Chemisia 24 September 1988; at the upper limit of its distribution (SHORT et al. 1990).

Common Camaroptera, *Camaroptera brachyura aschani* GRANVIK

Males 10.0 - 14.0 g, females 9.5 - 13.0 g, subadult specimens 9.0 - 9.5 g, 10 specimens ringed, 6.5 - 13.0 g. Gonads mostly small, stomach contents: tiny insect fragments. Quite common in undergrowth mostly near the forest edge and in swamp. Listed by BRITTON (1980) as *C. brachyura griseigula*; DIAMOND & FAYAD (1979) have recorded it at the forest edge. Much more frequent than *C. chloronota*, possibly also indicating disturbed character of North Nandi.

Olive-green Camaroptera, *Camaroptera chloronota toroensis* (JACKSON)

Males 10.5 and 10.8 g. male collected 21 November 1979 with firm gonads indicates breeding in North Nandi but rare because near upper limit of distribution as usual range below 1800 m (URBAN, FRY & KEITH 1997). Found in forest undergrowth; has only recently been recorded in North Nandi (DIAMOND & FAYAD 1979), while also common in Kakamega and much more frequent there than *C. brachyura* (ZIMMERMAN 1972).

White-browed Crombec, *Sylvietta l. leucophrys* (SHARPE)

Males 9.0 - 11.0 g, females 8.2 - 10.5 g, subadult male mist-netted 21 November 1979 near Chemisia 10.7 g, specimens ringed and released 9.5 and 10.5 g. Ovaries small, stomach contents: tiny insect fragments. Quite common in undergrowth but recorded more often in areas with broken canopy. Already collected May 4, 1898 in "Nandi, 6500 ft." by JACKSON (1901: 70). Recorded in North Nandi (DIAMOND & FAYAD (1979) but listed as rare visitor only in lower Kakamega Forest (ZIMMERMAN 1972: 329) where near lower altitudinal limit (MANN 1980). Nominate subspecies occurring in western Kenya (PARKES 1987).

Red-faced Crombec, *Sylvietta whytii jacksoni* (SHARPE)

Male, 11.0 g, 5 December 1978, forest edge near escarpment, with nest and two eggs, one unsexed specimen (23 September 1988) 10.5 g. Occurrence near upper altitudinal limit (SHORT et al. 1990: 186).

Grey-capped Warbler, *Hypergerus lepida* HARTLAUB

2 females 18.9 and 20.3 g, both caught 29 November 1979 in the same net near forest edge; one female with small gonads, the second about to breed. Already recorded in "Nandi, 6500 ft." by JACKSON (1901: 68). Formerly separated as *Eminia* but placed in *Hypergerus* by SHORT et al. (1990: 188) following GRIMES (1974) and TRAYLOR (1986).

Southern Hyliota, *Hyliota australis slatini* SASSI

Male, 25 November 1979, 11.9 g, gonads small. Iris very dark brown, bill black, base upper mandible and basal half of lower mandible bluish grey, legs lead-grey. Preferably in canopy; specimen shot high up in tree, therefore may have been overlooked elsewhere. Agrees with type specimen collected by Rudolf GRAUER in Beni, October 1910, in NMW (no.25.157) but bill smaller in Nandi specimen. Also listed as rare bird in Kakamega Forest by ZIMMERMAN (1972: 307) but "numerous records of the race *slatini* from the Kakamega Forest" in 1980 (PEARSON 1981: 112) and listed as "usual in Kakamega" in 1981 (PEARSON 1983: 142).

Uganda Warbler, *Phylloscopus budongoensis* (SETH-SMITH)

Males 8.0 - 9.0 g (3), females 7.0 - 8.0 g (2). Male with enlarged gonads shot high up in tree 13 November 1978, but two males and female mist-netted near ground 14 and 27 November 1978; near Chemisia only one female with very small ovaries mist-netted 29 November 1979. Stomach contents: tiny insect fragments. Recorded in N Nandi by DIAMOND & FAYAD (1979) but common only in Kakamega Forest, where usually found in the canopy (ZIMMERMAN 1972: 311).

Brown (Woodland) Warbler, *Phylloscopus umbrovirens mackensianus* (SHARPE)

Male, 22 November 1978, 9.5 g with small gonads mist-netted near the forest edge; female, 27 November 1978, 11.0 g mist-netted in the forest but near clearing; ovaries enlarged, eggs yolking explain higher weight. Only specimens recorded, possibly due to preferred habitat in canopy and preferable at higher elevations; listed in Kakamega Forest as rare visitor only (ZIMMERMAN 1972: 329).

Willow Warbler, *Phylloscopus trochilus acredula* (L.)

Female, 21 November 1978, 8.5 g; unsexed, Chepyegoris, 6 December 1978, 8.5 g. Only these two specimens mist-netted at the forest edge. *P. t. acredula* is the subspecies of the Willow Warbler usually recorded in Kenya but mainly at lower altitudes, which may explain scarcity in study area (BRITTON 1980).

Brown Parisoma, *Parisoma lugens jacksoni* SHARPE

Males, 13.5 and 16.0 g, female, 14.7 g. Gonads small, stomach contents: insect fragments. Pair mist-netted together near forest edge (track 10) 23 November 1979. Already recorded in "Nandi, 6500 feet, June 14, 1898" and "first seen, in tall tree in thick bush" by JACKSON (1901: 94). Type specimen also collected by JACKSON from Mt.Elgon, 25 February 1890 (WARREN & HARRISON 1971).

Blackcap, *Sylvia a. atricapilla* (L.)

Males, 17.0 - 18.0 g, 3 males mist-netted and released 1979, 16.0 - 20.5 g, females 17.9 - 20.0 g, 5 females mist-netted and released 1979, 17.0 - 21.5 g; five specimens were mist-netted and ringed 25 - 29 November 1978 in the Kamweiga-Kipsamoiti part of the study area. Relatively rare in the North Nandi Forest compared to other localities in Kenya (POMEROY & LEWIS 1989). The weights have been rather low for wintering birds with only one female being quite fat.

Family Muscicapidae**White-eyed Slaty Flycatcher, *Melaenornis f. fischeri* (REICHENOW)**

Males, 24.0, 25.5 and 26.0 g, females, 26.0, 28.0 and 28.3 g, one ringed 24 November 1979, 25.0 g; gonads enlarged in a male collected 23 11 1979, otherwise quite small. Stomach contents: beetles and other insect remains. Usually found only at forest edge and in trees near swamp. Collected by Jackson in "Nandi, 6500 feet" 2 July 1896 (imm. male) and 17 February 1898 (JACKSON 1901: 88).

Northern Black Flycatcher, *Melaenornis edolioides lugubris* (MÜLLER)

Female with small gonads 29 November 1978, 31.5 g, subadult female collected 6 December 1978, 32.0 g; only found at forest edge but generally prefers lower elevations (SHORT et al. 1990: 190).

Chapin's Flycatcher, *Muscicapa lendu lendu* (CHAPIN)

Male, 7 December 1978, 15.5 g, mist-netted in forest, with very small gonads, not seen or caught anywhere else. Listed in North Nandi Forest by BRITTON (1980: 170) but here at the eastern limit of its distribution; also status in Kakamega Forest listed formerly as uncertain with only 4 records (ZIMMERMAN 1972: 329) but recorded again there 1981 (PEARSON 1983: 143) and even observed feeding young in Kakamega Forest more recently: 6 January 1987 (PEARSON 1989).

African Dusky Flycatcher, *Muscicapa adusta murina* (FISCHER & REICHENOW)

Males, 8.6, 9.0 and 9.5 g, females, 9.0, 10.0, 10.5 and 11.0 g (2). Male (9.5 g) collected 19 November 1979 with large firm gonads, female taken 11 December 1979 during breeding. Stomach contents: tiny insect remains. At the edge of forest and near clearings, mostly higher up in the trees and only rarely mist-netted but also listed by DIAMOND & FAYAD (1979) and already recorded in "Nandi, 6500 feet" by JACKSON (1901: 88).

Family Platysteiridae**Common Shrike-Flycatcher, *Bias flammulatus aequatorialis* (JACKSON)**

Only one female weighing 30.0 g shot in forest 9 November 1978; occurrence in Nandi Forests at eastern limit of distribution of species (SHORT et al. 1990: 192).

Chin-spot Batis, *Batis molitor puella* REICHENOW

Females, 10.6 and 11.3 g, gonads quite small; only found near Chemisia and at swamp 29 November and 10 December 1979. Listed from "Nandi, 6500 feet" by JACKSON (1901: 90).

Black-throated Wattle-eye, *Platysteira peltata mentalis* BARBOZA DU BOCAGE

Adult males 13.9 - 15.0 g, subadult male 13.0 g, females 14.5 - 18.8 g, subadult still with brown back and collar, becoming blackish on sides of head and crown only. Only found in higher trees or near forest edge, uncommon as bird of higher elevations usually (SHORT et al. 1990: 194) but already listed in "Nandi, 6500 feet" by JACKSON, who collected a juvenile April 12, 1898 (JACKSON 1901: 91); only this species of Wattle-eyes has been recorded in North Nandi by DIAMOND & FAYAD (1979).

Jameson's Wattle-eye, *Platysteira jamesoni* (SHARPE)

Adult males, 10.0 - 15.2 g, subadult male 11.4 g, unidentified subadults 9.0 and 10.0 g, females 10.1 - 11.5 g; female mist-netted 20 November 1979 with yolked soft egg, male with firm gonads, male with very large gonads 25 November 1979, only weighing 10.8 g. Subadult with greyish head and back without metallic gloss, throat already glossy but still bordered by few brownish tipped feathers. Quite common deep in forest and in valleys near small streams, but probably less common in North Nandi Forest than in Kakamega; occurring also at 1700 m in the South Nandi (MANN 1980) but not yet recorded by JACKSON (1938) probably because being a forest species preferring dense undergrowth and so rarely seen. Listed as subspecies of *Dyaphorophytia blisseti* by ERARD in URBAN, FRY & KEITH (1997) who again separated the short-tailed Wattle-eyes generically but included in *Platysteira* by SHORT et al. (1990) who have given it species rank, including it only in a superspecies with western *blisseti* and *chalybea*.

Yellow-bellied Wattle-eye, *Platysteira concreta silvae* (HARTERT & VAN SOMEREN)

Adult males, 11.2, 12.5 and 14.0 g, subadult males mist-netted 9 December 1978, 12.0 g, female near breeding 7 December 1978, 13.0 g, also near breeding 20 11 1979, 11.0 g, breeding 27 November 1979, 15.2 g. Iris dark brown, eye wattle bright green, duller in juveniles. Rarely found in 1978 in forest quite near to escarpment next to Kakamega Forest; pair mist-netted together 7 December 1978, subadult males caught quite near to pair 9 December 1978. Also mist-netted pair together 20 November 1979 near Chemisia, caught and seen on a few occasions less than 1 m above ground. Previously known only from Kakamega Forest, the type being collected at Silwa, Kaimosi; a female mist-netted August 6, 1965 by ZIMMERMAN (1972) only weighed 9.0 g and was not yet in breeding condition, a male weighed 9.8 g. Neither DIAMOND & FAYAD (1979) nor MANN (1980) found Yellow-bellied Wattle-eyes in the North Nandi but MANN has cited a single observation by D. STURBER "in the South Nandi Forest near Kaimosi" which caused the species to be regularly listed in South Nandi later on (LEWIS & POMEROY

1989, SHORT et al. 1990). Subspecies *silvae* acknowledged by ZIMMERMAN (1972) and M.A. TRAYLOR in Vol. XI of Peter's Check-list of the birds of the world (1986) but included in *Dyaphorophya c. graueri* more recently by ZIMMERMAN et al. (1996) and in URBAN, FRY & KEITH (1997). Our specimens clearly show the olive-green colour of the upper-side and the grey wash in the nape, as well as the yellowish-green edges of the quills mentioned in the description and are much deeper golden yellow than the series of *D. c. graueri* in the NMW collected by GRAUER in the eastern forests of Zaire, thus confirming the differences of the widely separated populations of western Kenya.

White-tailed Crested-Monarch-Flycatcher, *Elminia a. albonotatus* SHARPE

Males, 7.4 - 10.0 g, females, 7.0 - 9.0 g, 19 specimens ringed and released 1979, 8.0 - 10.2 g, two ringed and released 1988 in same area, 9.5 and 11.2 g. Gonads firm, enlarging and near breeding 14 November 1978 and 20 November 1979, also a female near breeding 30 November 1979. Subadult male collected 22 November 1979 (No.129, 8.3 g) still with gape yellow. Usually deep in forest, quite common, but pairs rarely mist-netted together. Recorded in "Nandi, 6000 feet" as "lover of the thick forest with an undergrowth of tall bush and small trees" (JACKSON 1901: 93). Formerly listed in *Trochocercus* but recently included in *Elminia* (DOWSETT & DOWSETT-LEMAIRE 1980: 186, SHORT et al. 1990: 195).

African Paradise Monarch-Flycatcher, *Terpsiphone viridis* ssp.

Males, 14.0 - 17.5 g, females, 13.5 - 14.5 g, gonads small, representing *T. v. suahelica* REICHENOW. One male weighing 17.5 g collected 9 December 1978 represents *T. v. ferreti* (GUÉRIN-MÉNEVILLE) with much white on the wings, white tail and under tail coverts. Rarely mist-netted because preferring canopy of trees. Also recorded as "scarce in Nandi" by JACKSON (1901: 92) who listed it as *Terpsiphone cristata*. *T. viridis* is a resident as well as a migrant in wide parts of Kenya (SHORT et al. 1990: 196) and only one specimen with much white in the wing has been observed in Kakamega by ZIMMERMAN (1972: 309).

Family Paridae

White-bellied Tit, *Parus albiventris* SHELLEY

Males, 19.5 and 20.1 g, male with large gonads 11 December 1979, 22.5 g, female with small gonads 2 December 1979, 21.0 g, about to lay 8 December 1978, 23.0 g. Uncommon, in vegetation along small river and near swamp at forest edge. Has been recorded as being "very plentiful in the open as well in belts of forest" by JACKSON (1899: 639).

Dusky Tit, *Parus f. funereus* (J. & E. VERREAUX)

Male shot 27 November 1978 with enlarged gonads 28.0 g, male 11 December 1979 with very large gonads 24.4 g, females 24.0 and 24.4 g. Uncommon, mist-netted only once

on ground, rarely seen in forest canopy where three specimens shot high up in trees. Observed again in study area near Chemisia 22 September 1988. Collected in "Nandi forest, 6000 feet" April 10, 1898 (JACKSON 1899: 638); recorded in Nandi by DIAMOND & FAYAD (1979) and from Kakamega Forest too, where probably more common and resident (ZIMMERMAN 1972: 316).

Family Nectariniidae

Green Sunbird, *Anthreptes rectirostris tephrolaema* (JARDINE & FRASER)

Ad. males 10.1 g - 11.9 g, females 9.7 - 11.9 g, gonads firm in ad. male collected 1 December 1979. Male weighing 11.9 g (taken 2 December 1979) not yet in full breeding plumage with wider brownish-grey throat and a few brownish feathers on the breast; quite rare though forest species, but Nandi Forest probably at upper limit of distribution.

Collared Sunbird, *Anthreptes collaris garguensis* MEARNs

Adult males, 7.0 - 8.5 g, subadult male 7.9 g, females 7.5 - 8.2 g. Males collected 19 November (8.5 g), 24 November (7.8 g) & 1 December 1979 (7.5 g) breeding, juvenile male (5 12 1979) 7.0 g. More common near forest edge. Also male from "Nandi, 6500 feet, April 17, 1898" (JACKSON 1899: 636) but listed in Kakamega Forest as forest species (ZIMMERMAN 1972: 329).

Olive Sunbird, *Nectarinia olivacea ragazzii* (SALVADORI)

Males, 9.5 - 13.0 g, 12 males ringed and released 11.0 - 13.2 g, adult females 8.5 - 12.0 g, juvenile female 8.5 g, 8 females ringed and released 9.5 - 12.4 g; female with yolking eggs (mist-netted 16 November 1978) 11.0 g, about to lay (19 November 1979) 11.0 g, males breeding or with very enlarged gonads. No. 414 (23 11 1978, weighing 8.5 g) subadult female. Only sunbird regularly found deep in forest foraging in undergrowth but not recorded at forest edge. Not listed in Nandi by JACKSON (1899: 636).

Green-headed Sunbird, *Nectarinia verticalis viridisplendens* (REICHENOW)

Adult males, 12.0 - 16.4 g, juvenile male 14.5 g, 4 males ringed 14.9 - 15.5 g, females 12.0 - 15.2 g, subadults with dark throat and cap (collected 27 11 1978) 14.5 g, 27 November 1979 11.0 g, females 8.9 and 11.0 g. Gonads somewhat enlarged, probably after breeding. Heavy moult in a female taken 23 11 1979 (13.9 g). Found in forest but also at forest edge and near swamp. Listed in Nandi by JACKSON but "the least common of the Sunbirds in Nandi" and "prefers to hunt about for its insect-food amongst the foliage of tall trees" (JACKSON 1899: 635).

Green-throated Sunbird, *Nectarinia r. rubescens* (VIEILLOT)

Male, 25 November 1979 11.2 g, female breeding, 26 November 1979, 9.8 g; only specimens recorded though obviously breeding but occurrence at eastern limit of distribution.

Variable Sunbird, *Nectarinia venusta falkensteini* (FISCHER & REICHENOW)

Males, 7.0 - 7.9 g, females 6.2 - 7.8 g, subadult males 5.0 and 6.2 g, subadult females 5.5 g; subadult males with few dark feathers on throat or entirely in juvenile plumage, but adults still in breeding condition. Only found near or at forest edge visiting *Leonotis* flowers. Listed in "Nandi, 6500 feet, February 14, 1898" (JACKSON 1899: 635).

Northern Double-collared Sunbird, *Nectarinia preussi kikuyensis* (MEARNS)

Adult males 6.0 - 7.1 g, male with large gonads 7.9 g, subadult male 5.0 g, females 5.9 - 6.2 g, female with yolking egg (10 December 1979) 8.2 g, juvenile females 5.5 and 5.8 g. Only found at forest edge and near swamp. Listed already in "Nandi, 6500 feet" by JACKSON, who records it among *Cinnyris reichenowi* as plentiful (JACKSON 1899: 634).

Bronze Sunbird, *Nectarinia k. kilimensis* SHELLEY

Adult males, 14.0 - 18.0 g, subadult male (no.693) 14.0 g, ringed and released males 16.9 - 18.8 g, females 13.0 - 15.8 g. Males in breeding plumage, near breeding or in breeding condition. Only at forest edge and near swamp. Already listed in "Nandi, 7500 feet, July 10, 1896" and "juv. male Nandi, 6500 feet, Feb. 13, 1898" by JACKSON (1899: 632) who records it as "plentiful in Nandi, particularly where the (cork-like bark, red flower, large green leaf) tree is in flower, and also the swamp-loving plants with red tubercle flower".

Malachite Sunbird, *Nectarinia famosa aeneigularis* SHARPE

Adult males, 13.9 - 15.2 g, subadult males, 12.0 - 13.0 g, females 11.3 - 13.4 g. Not yet in breeding plumage with only partly elongated tail and few green feathers. Forest edge and swamp only.

Family Zosteropidae

Yellow White-eye, *Zosterops senegalensis jacksoni* NEUMANN

Males, 9.2 - 12.0 g, males with large gonads 10.0 - 12.0 g, females, 8.8 - 12.0 g, female with two yolking eggs (collected 15 November 1978) 13.5 g, ringed specimens 9.0 - 12.5 g; wings of males 56.0 - 62.0 mm, females 56.0 - 61.5 mm. Most adult birds in breeding condition with enlarged gonads or about to lay (see female listed above). Stomach contents: snails, insect fragments, figs, small seeds. Very common, usually deep in forest, hunting in undergrowth, commonly mist-netted near ground, but also seen foraging in

canopy, usually in parties. Already listed in "Nandi, 6500 feet, June 29, 1896" as being plentiful (JACKSON 1899: 637).

The White-eyes from Nandi differ slightly from specimens from the type locality (Mau) of *Z. jacksoni* NEUMANN. Kakamega Forest birds have been identified as being referable to the race *yalensis* named by VAN SOMEREN from Kaimosi, but *Z.s.yalensis* has been included in *Z. s. jacksoni* by MOREAU (1967). In his earlier study, MOREAU (1951) has already noted the more yellow-green belly of the White-eyes in western Kenya but has only studied in detail larger series of "*Z. s. yalensis*" which he has regarded (p. 364) as intergrading population between the western *Z. s. stuhlmanni* and the eastern *Z. s. jacksoni*. Nandi birds therefore would still represent *Z. s. jacksoni*.

Oriole Finch, *Linurgus olivaceus elgonensis* VAN SOMEREN

Adult males 19.0 - 21.0 g, subadult males 16.5 - 19.2 g, females 17.0 - 19.0 g, juv. 13.6 - 17.3 (once 18.5) g. Juvenile and subadult specimens collected while males still in breeding condition, 6 December 1979. Very rare in study area near Kamweiga in 1978, but more common near Chemisia in 1979 where also seen in 1988 in the denser undergrowth of this area. Listed as montane species with uncertain status in Kakamega Forest (ZIMMERMAN 1972: 329); typical representative of the undergrowth avifauna on Mt. Elgon too (KINGS 1997).

Streaky Serin, *Serinus striolatus affinis* (RICHMOND)

Males 19.5 - 23.5 g, females 20.0 - 23.0 g, subadults (sex.?) 18.4 - 20.4 g. Only at the forest edge and near swamp. When JACKSON (1899: 621) wrote "Not nearly so plentiful in Nandi as might have been expected, since the elevation and character of the country are so similar to those of the Ravine, where the bird is so common", he certainly was not in the forest. Included in *Serinus* by SHORT et al. (1990) but listed in *Crithagra* by VAN DEN ELZEN (1985: 442).

Thick-billed Serin, *Serinus burtoni tanganicae* GRANVIK

Males 29.8 - 37.0 g, females 30.0 - 33.9 g; gonads firm, very large in male collected near swamp 10 December 1979. Also observed near Chemisia in 1988. Kakamega birds have been assigned to subspecies *S. b. gurneti* GYLDENSTOLPE by ZIMMERMAN (1972: 322); *Poliospiza burtoni gurneti* indeed is a new name for *P. b. somerani* GYLDENSTOLPE, 1923, based on specimens from Mt. Elgon but synonymized with *Serinus burtoni tanganicae* by RAND (1968: 228). Specimens collected by Jackson in "Nandi, 6500 feet" 26 and 27 June 1898 were listed as *Serinus albifrons* (JACKSON 1899: 622) which is the subspecies from east of the Rift Valley. Wing 87.5 and 88.0 mm in two males in NMW, whereas one male collected by Zimmerman measured only 84 mm. Birds from Kenya west of the Rift Valley also listed among *S. b. tanganicae* by ZIMMERMAN et al. (1996); belongs to same superspecies as *S. striolatus* and has therefore to be included in *Crithagra* following VAN DEN ELZEN (1985).

African Citril, *Serinus citrinelloides brittoni* TRAYLOR

Adult males 13.0 and 13.5 g, subadult male 12.0 g. Not in the forest but only in dry cultivated area at forest edge near Kamweiga and not seen anywhere else. Separated from *Serinus* and included in *Dendrospiza* by VAN DEN ELZEN (1985: 442).

Yellow-fronted Canary, *Serinus mozambicus barbatus* (HEUGLIN)

Only seen 24 September 1988 at escarpment W Chemisia below forest edge; recorded in "Nandi" (SHORT et al. 1990).

Family Estrildidae**Gray-crowned Blackfinch, *Nigrita canicapilla schistacea* SHARPE**

Males, 15.5, 16.0 and 18.0 g, females 16.5 and 18.0 g (2). Gonads only slightly enlarged. Quite rare, only single specimens seen and mist-netted in clearings respectively near stream. A juvenile male was recorded in "Nandi, 6500 feet" by JACKSON (1899: 608) on July 2, 1898 where also "five nestlings have been taken from a tall tree on the 4th of June, 1898". Only rarely recorded in Kakamega Forest where a female in breeding condition was collected 20 July, 1963 (ZIMMERMAN 1972: 322), suggesting breeding season in summer.

Green Twinspot, *Mandingoa nitidula chubbi* (OGILVIE-GRANT)

Only one subadult specimen weighing 7.4 g (sex not visible) mist-netted at forest edge near Chemisia 28 November 1979.

Abyssinian Crimsonwing, *Cryptospiza salvadorii kilimensis* MOREAU & SCLATER

Males, 11.9 - 13.0 g, females, 12.3 - 12.9 g, subadult 11.1 g. Very rare in study area in 1978 but more common near Chemisia where seen in flight and feeding on ground in clearing along forest road, probably around a feeding site. Already found to be common in the South Nandi by MANN (1980).

Red-headed Bluebill, *Spermophaga r. ruficapilla* (SHELLEY)

Adult males 21.5 - 27.0 g, subadult males 22.8 - 27.0 g, juvenile males 23.0 g, 21 males ringed and released 22.0 - 26.5 g, adult females 21.5 - 27.0 g, subadult females 21.0 - 25.0 g, juvenile females 22.0 - 24.0 g, 15 females ringed and released 20.0 - 23.5 g. Very common in both study areas and in breeding condition, gonads still very enlarged in spite of many juvenile and subadult specimens. Adult male ringed 18 November 1979 (ring A 21737), retrapped 22 September 1988 near ringing site; weighing 28 g in 1988 when the crop was heavily filled with seeds; the weight had been only 25.5 g in 1979 (GICHUKI & SCHIFTER 1990; Fig. 9).



Fig. 9: Male of the Red-headed Bluebill *Spermophaga r. ruficapilla*, ringed W Chemisia 18 November 1979 and retrapped almost 9 years later, near ringing site at 22 September 1988 (Photo: H. Schifter).

Jameson's Firefinch, *Lagonosticta rhodopareia jamesoni* SHELLEY

Males 8.0 and 10.0 g, females 9.0 and 10.0 g, juvenile 8.5 g; not in the forest but only received from forest edge at Kamweiga 3 - 5 December 1978. Recorded in "Nandi, 6500 feet" by JACKSON, July 3, 1898 (JACKSON 1899).

Black-crowned Waxbill, *Estrilda n. nonnula* HARTLAUB

Males 6.9 - 8.0 g, females 6.9 - 9.0 g, female with egg ready to lay 27 November 1978 also 9.0 g, subadults of both sexes 6.0 - 7.5 g, ringed specimens 6.5 - 7.5 g. Not very common and more often recorded in degraded part of forest with no tall trees and clearings; more often seen 1979 near Chemisia.

Common Waxbill, *Estrilda astrild peasei* SHELLEY

Males 7.1 - 8.0 g, females 7.0 - 7.8 g, subadult female 8.0 g. Not breeding. Only observed in tall grass at swamp near Chemisia where moving in family parties.

Family Ploceidae

Grosbeak-Weaver, *Amblyospiza albifrons montana* VAN SOMEREN

Subadult male 43.0 g, ad. female 36.5 g, in study area near Kamweiga 20 and 28 November 1978, but not found near Chemisia in 1979. Recorded in "Nandi, 6500 feet" and "breeding in a marsh" by JACKSON (1899: 618).

Baglafecht's Weaver, *Ploceus baglafecht reichenowi* (FISCHER)

Adult males 31.0 - 34.0 g, subadult male 27.5 g, females 30.0 - 31.4 g, juvenile 24.0 g. Never seen in the forest itself but in former forest areas, cultivation areas and near streams and swamps. Recorded in "Nandi, 6500 feet" by JACKSON (1899), indicating use of locality name for habitat outside forest.

Black-billed Weaver, *Ploceus melanogaster stephanophorus* (SHARPE)

Males 22.0 - 25.4 g, male mist-netted 22 September 1988 25.8 g, females 21.5 - 24.8 g. Stomach contents: beetles, tiny insects and insect fragments, once a green cicada. Gonads mostly small, only few about to breed, also only one male with gonads increasing in size and becoming firm. Rarely seen in study area near Kamweiga, much more common in 1979 near Chemisia, where also observed in September 1988. Penduline nest containing one egg about 3 meters high above track, seen 23 September 1988 near Chemisia. A juvenile female was already recorded in "Nandi Forest, 6500 feet" April 10, 1898 by JACKSON (1899).

Brown-capped Weaver, *Ploceus i. insignis* (SHARPE)

Male 6 December 1978 27.0 g; one bird weighing 33.0 g mist-netted 21 September 1988 near Chemisia, escaped before being ringed. Pair seen 23 September in same area and nest occupied by pair about 5 m high near track, 24 September 1988. A nest was already recorded in "Nandi" 26 May 1898 (JACKSON 1899). Also a rare bird in Kakamega Forest (ZIMMERMAN 1972: 321).

Large Golden Weaver, *Ploceus xanthops* (HARTLAUB)

Only two females weighing 37.0 and 40.0 g in swamp near Chemisia 10 and 11 December 1979; never seen in forest, only in tall grass surrounding swamp near forest edge.

Vieillot's Black Weaver, *Ploceus n. nigerrimus* VIEILLOT

Male (35.0 g) collected 10 December 1979 in swamp near forest edge. Not seen in the forest but nesting next to the forest station in Kakamega Forest (TENNENT 1965: 100)

and sometimes visiting the interior of the forest for feeding though always nesting outside (ZIMMERMAN 1972: 320).

Dark-backed Weaver, *Ploceus bicolor mentalis* (HARTLAUB)

Males 30.0 g (2), females 26.0 g (2). Gonads slightly enlarged. Rarely seen in forest, single specimens mostly higher up in trees and obviously more common in lower Kakamega Forest despite changing density there as well (TENNENT 1965: 100; ZIMMERMAN 1972: 319). Named *Sycobrotus nandensis* by JACKSON (1899: 615) based on a female collected in "Nandi, 6000 feet, April 10, 1896" which has been synonymized with *P. b. mentalis* (HARTLAUB).

Fan-tailed Widowbird, *Euplectes axillaris phoeniceus* (HEUGLIN)

Males 26.2 - 30.0 g, males ringed 24.0 and 27.0 g, females 17.8 - 21.5 g, females ringed 19.0 and 19.5 g. Never seen in forest, but common in flocks in swamp near Chepyegoris in 1978, not in breeding plumage and gonads very small, slightly increasing in two females only. Male in "full breeding plumage, though still in flocks" recorded May 25, 1898" in "Nandi, 6500 feet" as well as "Male in change" in "Nandi, 6000 feet" 2 June, 1898 (JACKSON 1899: 601).

Family Sturnidae

Stuhlmann's Starling, *Poeoptera stuhlmanni* (REICHENOW)

Female, 6 December 1978, 38.0 g. Iris yellow, adult coming to breed and thus corresponding with Zimmerman's note that the iris is yellow in adult specimens but brown in immatures (ZIMMERMAN 1972: 317). Specimen shot in high tree near camp. A group of four seen also in second study area near camp, 4 December 1979; in same area flight of 6-7 specimens observed 24 September 1988 but obviously less common in North Nandi Forest than in Kakamega Forest, where it is classified as common (ZIMMERMAN 1972: 317). JACKSON (1899: 592) already recorded "several small flocks" of Stuhlmann's Starlings in "Nandi forests, 6000 feet" where he collected specimens on May 19, 1898 and described them as *Poeoptera greyi* which has been synonymized with *P. stuhlmanni* (SCLATER 1930: 667).

Family Oriolidae

Montane Oriole, *Oriolus percivali* OGILVIE-GRANT

One subadult male weighing 58.0 g shot in forest, 27 November 1978. Iris dark chestnut, bill base dirty pink, tips dark horn, legs lead-grey. Not seen anywhere else and not recorded by DIAMOND & FAYAD (1979), but male and female collected in "Nandi, 6500 feet" and a juv. female from "Nandi, 6200 feet" taken also June 28, 1898, listed by JACKSON (1899: 595). Following PRIGOGINE (1978) the Montane Oriole *O. percivali* has to be regarded as a species distinct from *O. larvatus*.

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The Avifauna of the North Nandi Forest in comparison with Kakamega and Mount Elgon Forests, Kenya

Explanatory Notes:

(A) List of bird species recorded in Nandi Forest by NMK/NMW Joint Expeditions 1978, 1979 and 1988 including those recorded by DIAMOND & FAYAD (1979) [DF]: species marked with asterisk* indicates specimens collected; (FE) marks species found only at forest edge.

e = Subspecies endemic to North Nandi Forest

ek = Subspecies endemic to North Nandi forest and Kakamega Forest

(B) Species recorded in "Nandi" or "Nandi forest" by JACKSON (1899,1901 and 1902) [J]

(C) Species recorded by D.A. Zimmerman and A.D. Forbes-Watson in Kakamega Forest (see ZIMMERMAN 1972) marked ZFW; species listed in RIPLEY & BOND (1971) marked FW (observations by A.D. Forbes-Watson) respectively USNM (specimens in United States National Museum, Washington, D.C.).

*) indicates species seen in forest and non-forest

(D) Species recorded in Mt.Elgon (List in NMK) [E] with additions from KINGS (1997)

Only the species recorded in North Nandi Forest are listed completely; from the other areas only those are listed which occur in Nandi as well, and those which were expected to occur in Nandi but were not recorded .

Species	A	B	C	D
Ciconiidae				
White Stork, <i>Ciconia ciconia</i>	1979 (FE)		FW	
Threskiornithidae				
Hadada, <i>Bostrychia hagedash</i>	1978		FW	E
Accipitridae				
Black-breasted Snake Eagle, <i>Circaetus pectoratiss</i>	DF			
African Goshawk, <i>Accipiter tachiro</i>	1978,1979*		USNM	E
African Little Sparrowhawk, <i>Accipiter minullus</i>			FW	E
Great Sparrowhawk, <i>Accipiter melanoleucus</i>	1978,1979		USNM	E
Augur Buzzard, <i>Buteo augur</i>	1988 (FE)		FW	
Long-crested Eagle, <i>Lophaetus occipitalis</i>	DF		FW	E
Crowned Eagle, <i>Stephanoaetus coronatus</i>	1978,1979,1988		ZFW	
Phasianidae				
Crested Guineafowl, <i>Guttera edouardi</i>	1978,1979*		ZFW	E
Scaly Francolin, <i>Francolinus squamatus</i>	1979*		ZFW	E
Gruidae				
Gray Crowned Crane, <i>Balearica regulorum</i>	1979 (FE)		FW	
Rallidae				
White-spotted Flufftail, <i>Sarothrura pulchra</i>	1979*		ZFW	
Buff Spotted Pygmy Flufftail, <i>Sarothrura elegans</i>	1978*		USNM	
Red-chested Flufftail, <i>Sarothrura rufa</i>	1979*		ZFW	

Scolopacidae

Green Sandpiper, *Tringa ochropus* 1978* FW

Columbidae

Green Pigeon, *Treron calva* 1978,1979 FW E
 Tambourine Dove, *Turtur tympanistria* 1978,1979*,1988 ZFW E
 Blue-spotted wood-Dove, *Turtur afer* 1979 (FE) USNM E
 Delegorgue's Pigeon, *Columba delegorguei* USNM E
 Olive Pigeon, *Columba arquatrix* 1978,1979* ZFW E
 Lemon Dove, *Aplopelia larvata* ZFW E

Psittacidae

Grey Parrot, *Psittacus erithacus* ZFW
 Red-fronted Parrot, *Poicephalus guilielmi* 1978 E
 Brown Parrot, *Poicephalus meyeri* DF FW E

Musophagidae

Great Blue Turaco, *Corythaeola cristata* ZFW E
 Ross's Turaco, *Musophaga rossae* 1978* FW E
 Black-billed Turaco, *Tauraco schuetti* ZFW
 Hartlaub's Turaco, *Tauraco hartlaubi* 1978,1979* J ZFW E

Cuculidae

Red-chested Cuckoo, *Cuculus solitarius* DF USNM*)
 African Emerald Cuckoo, *Chrysococcyx cupreus* 1988 J USNM
 Klaas' Cuckoo, *Chrysococcyx klaas* 1978* USNM
 Diederik Cuckoo, *Chrysococcyx caprius* 1979* FW
 Black Coucal, *Centropus grillii* USNM E
 Blue-headed Coucal, *Centropus monachus* 1979 (FE) J USNM

Strigidae

Common Scops-Owl, *Otus scops* 1978*
 African wood owl, *Ciccaba woodfordi* 1979 ZFW E
 Red-chested Owlet, *Glaucidium tephronotum* 1978*,1979 ZFW E

Coliidae

Speckled Mousebird, *Colius striatus* 1978,1979* J USNM E

Trogonidae

Bar-tailed trogon, *Apaloderma vittatum* USNM E
 Narina's Trogon, *Apaloderma narina* 1978,1979* J FW E

Meropidae

Cinnamon-chested Bee-eater, *Merops oreobates* 1978,1979* J USNM
 Eurasian Bee-eater, *Merops apiaster* 1978*,1979 (FE) J FW

Coraciidae

Broad-billed Roller, *Eurystomus glaucurus* 1978* J FW E

Phoeniculidae

White-headed wood Hoopoe, *Phoeniculus bollei* 1978,1979*,1988 J USNM E

Bucerotidae

Crowned Hornbill, *Tockus alboterminatus* 1979*,1988 J FW E
 Black-and-white casqued Hornbill, *Ceratogymna subcylindricus* 1978,1979*,1988 USNM E

Capitonidae

Grey-throated Barbet, <i>Gymnobucco bonapartei</i>	1978,1979*,1988	J	USNM	E
Yellow-rumped Tinkerbird, <i>Pogoniulus bilineatus</i>	1978,1979*,1988	J	USNM	E
Yellow-spotted Barbet, <i>Buccanodon duchaillui</i>	1978,1979*		USNM	
Hairy-breasted Barbet, <i>Tricholaema hirsuta</i>			FW	
Double-toothed Barbet, <i>Lybius bidentatus</i>	1978,1979*	J		
Yellow-billed Barbet, <i>Trachyphonus purpuratus</i>	1978,1979*,1988	J	USNM	E

Indicatoridae

Scaly-throated Honeyguide, <i>Indicator variegatus</i>	1978*	J	USNM*)	E
Greater Honeyguide, <i>Indicator indicator</i>	1978 (FE)		FW*)	E
Lesser Honeyguide, <i>Indicator minor</i>	1978*		USNM*)	E
Least Honeyguide, <i>Indicator exilis</i>	1979*		USNM	E

Picidae

Fine-banded Woodpecker, <i>Campethera tullbergi</i>	1978,1979*	J	USNM	E
Cardinal Woodpecker, <i>Dendropicos fuscescens</i>	1978,1979*,1988	J	ZFW	E
Yellow-crested Woodpecker, <i>Dendropicos xantholophus</i>	1978*		USNM	E

Eurylaimidae

African Boadbill, <i>Smithornis capensis</i>	1978		ZFW	
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Hirundinidae

Common Sand Martin, <i>Riparia riparia</i>	1978* (FE)			
Barn Swallow, <i>Hirundo rustica</i>	1979*		FW	
Black Rough-wing, <i>Psalidoprocne holomelaena</i>	1978*,1988		ZFW	E

Motacillidae

Yellow Wagtail, <i>Motacilla flava</i>	1978 (FE)		FW	
Gray Wagtail, <i>Motacilla cinerea</i>	1979		USNM	E
African Pied Wagtail, <i>Motacilla aguimp</i>	1979	J	FW	
Plain-backed Pipit, <i>Anthus leucophrys</i>	1978 (FE)		USNM*)	

Campephagidae

Grey Cuckoo-Shrike, <i>Coracina caesia</i>	1978,1979*,1988	J	ZFW	E
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Pycnonotidae

Common Bulbul, <i>Pycnonotus barbatus</i>	1978,1979*,1988	J	USNM*)	E
Shelley's Greenbul, <i>Andropadus masukuensis</i>	1978,1979*,1988		USNM	
Plain Greenbul, <i>Andropadus curvirostris</i>	1978,1979*		ZFW	E
Yellow-whiskered Greenbul, <i>Andropadus latirostris</i>	1978,1979*,1988	J	ZFW	E
Slender-billed Greenbul, <i>Andropadus gracilirostris</i>	1978,1979*,1988	J	ZFW	E
* Olive Greenbul, <i>Phyllastrephus cabanisi (placidus)</i>	1978,1979*,1988		ZFW	E
* Common Bristlebill, <i>Bleda syndactyla</i>	1978,1979*,1988		ZFW	

Prionopidae

Pink-footed Puffback, <i>Dryoscopus angolensis</i>	1979*,1988	J	ZFW	
Brown-crowned Tchagra, <i>Tchagra australis</i>	1978,1979*	J	USNM*)	
Luehder's Bushshrike, <i>Laniarius luehderi</i>	1978,1979*,1988	J	ZFW	E
Tropical Boubou, <i>Laniarius ferrugineus</i>	1979*,1988	J	USNM	E
Doherty's Bush-Shrike, <i>Malaconotus dohertyi</i>	1979*,1988		USNM	E

Laniidae

Common Fiscal, <i>Lanius collaris</i>	1979 (FE)	J	FW*)	E
Mackinnon's Fiscal, <i>Lanius mackinnoni</i>	1978,1979*,1988	J	USNM	

Turdidae

White-starred Robin, <i>Pogonocichla stellata</i>	1978, 1979*			E
^e Equatorial Akalat, <i>Sheppardia aequatorialis</i>	1978, 1979*, 1988		ZFW	
Gray-winged Akalat, <i>Sheppardia polioptera</i>	1979*		ZFW	E
^{ek} Brown-chested Alethe, <i>Alethe poliocephala</i>	1978, 1979*, 1988		ZFW	E
Common Robin-Chat, <i>Cossypha caffra</i>	1979* (FE)		FW*)	E
^e Blue-shouldered Robin-Chat, <i>Cossypha cyanocampter</i>	1978, 1979*, 1988		ZFW	E
Heuglin's Robin-Chat, <i>Cossypha heuglini</i>	1979* (FE)	J		
Snowy-crowned Robin-Chat, <i>Cossypha niveicapilla</i>	1978*	J	FW	
^e White-tailed Ant Thrush, <i>Neocossyphus poensis</i>	1978, 1979*, 1988		ZFW	
Common Stone-Chat, <i>Saxicola torquata</i>	1978*, 1988 (FE)	J	FW*)	E
Anteater Chat, <i>Myrmecocichla aethiops</i>	1978* (FE)	J	FW*	E
Cliff-Chat, <i>Myrmecocichla cinnamomeiventris</i>	1988 (FE)			
^e Northern Olive Thrush, <i>Turdus olivaceus</i>	1978, 1979*, 1988	J		E

Timaliidae

Gray-chested Illadopsis, <i>Kakamega poliothorax</i>	1978, 1979*, 1988		ZFW	
^{ek} African Hill Babbler, <i>Illadopsis abyssinica</i>	1978, 1979*, 1988	J	ZFW	E
Mountain Illadopsis, <i>Illadopsis pyrrhopterum</i>	1978, 1979*, 1988		ZFW	E
Scaly-breasted Illadopsis, <i>Illadopsis albipectus</i>	1978, 1979*, 1988		ZFW	

Sylviidae

Black-faced Rufous Warbler, <i>Bathmocercus rufus</i>	1978, 1979*, 1988		ZFW	E
African Yellow Warbler, <i>Chloropeta natalensis</i>	1979* (FE)	J	FW*)	E
Singing Cisticola, <i>Cisticola cantans</i>	1978* (FE)			
Chubb's Cisticola, <i>Cisticola chubbi</i>	1978, 1979*, 1988	J	USNM	
Levaillant's Cisticola, <i>Cisticola tinniens</i>	1978* (FE)	J		
Tawny-flanked Prinia, <i>Prinia subflava</i>	1978* (FE)		USNM*)	
White-chinned Prinia, <i>Prinia leucopogon</i>	1978, 1979*, 1988	J	ZFW	E
Banded Prinia, <i>Prinia bairdii</i>	1978, 1979*, 1988	J	ZFW	
Black-collared Apalis, <i>Apalis pulchra</i>	1978, 1979*, 1988	J	ZFW	E
Buff-throated, <i>Apalis rufogularis</i>	1979*, 1988	J	ZFW	E
Buff-bellied Warbler, <i>Phyllolais pulchella</i>	1988 (FE)			
Common Camaroptera, <i>Camaroptera brachyura</i>	1978, 1979*, 1988		USNM	E
Olive-green Camaroptera, <i>Camaroptera chloronota</i>	1978, 1979*		ZFW	
White-browed Crombec, <i>Sylvietta leucophrys</i>	1978, 1979*, 1988	J	ZFW	E
Red-faced Crombec, <i>Sylvietta whytii</i>	1978*, 1988 (FE)			
Grey-capped Warbler, <i>Hypergerus lepida</i>	1979*	J		
Southern Hyliota, <i>Hyliota australis</i>	1979*		USNM	
Uganda Warbler, <i>Phylloscopus budongoensis</i>	1978, 1979*		ZFW	E
Brown Warbler, <i>Phylloscopus umbrovirens</i>	1978*, 1988		ZFW	E
Willow Warbler, <i>Phylloscopus trochilus</i>	1978*		USNM	
Brown Parisoma, <i>Parisoma lugens</i>	1979*	J		E
Blackcap, <i>Sylvia atricapilla</i>	1978, 1979*		USNM	

Muscicapidae

White-eyed Slaty Flycatcher, <i>Melaenornis fischeri</i>	1978, 1979* (FE)	J	ZFW	
Northern Black Flycatcher, <i>Melaenornis edolioides</i>	1978* (FE)	J		E
Chapin's Flycatcher, <i>Muscicapa lendu</i>	1978*		ZFW	
African Dusky Flycatcher, <i>Muscicapa adusta</i>	1978, 1979*, 1988	J	ZFW	E

Platysteiridae

Common Shrike-Flycatcher, <i>Bias flammulatus</i>	1978*		ZFW	
Chin-spot Batis, <i>Batis molitor</i>	1979* (FE)		FW*)	
Black-throated Wattle-eye, <i>Platysteira peltata</i>	1978, 1979*, 1988	J	FW	E

Jameson's Wattle-eye, <i>Platysteira jamesoni</i>	1978,1979*		ZFW	
^{ek} Yellow-bellied Wattle-eye, <i>Platysteira concreta</i>	1978,1979*		ZFW	
White-tailed Crested Monarch Flycatcher, <i>Elminia albonotatus</i>	1978,1979*,1988	J	ZFW	E
African Paradise Monarch-Flycatcher, <i>Terpsiphone viridis</i>	1978,1979*	J	USNM	E
Paridae				
White-bellied Tit, <i>Parus albiventris</i>	1978,1979*	J	ZFW	E
Dusky Tit, <i>Parus funereus</i>	1978,1979*,1988	J	ZFW	E
Nectariniidae				
Green Sunbird, <i>Anthreptes rectirostris</i>	1978,1979*		USNM	
Collared Sunbird, <i>Anthreptes collaris</i>	1978,1979* (FE)		ZFW	
Olive Sunbird, <i>Nectarinia olivacea</i>	1978,1979*,1988		ZFW	E
Green-headed Sunbird, <i>Nectarinia verticalis</i>	1978,1979*,1988	J	ZFW	E
Green-throated Sunbird, <i>Nectarinia rubescens</i>	1979*		ZFW	
Variable Sunbird, <i>Nectarinia venusta</i>	1979*,1988 (FE)	J	USNM	
Northern Double-collared Sunbird, <i>Nectarinia preussi</i>	1978,1979*,1988		ZFW	E
Bronze Sunbird, <i>Nectarinia kilimensis</i>	1979* (FE)	J	USNM*)	
Malachite Sunbird, <i>Nectarinia famosa</i>	1979* (FE)			
Zosteropidae				
Yellow White-eye, <i>Zosterops senegalensis</i>	1978,1979*,1988		ZFW	E
Fringillidae				
Oriole Finch, <i>Linurgus olivaceus</i>	1978,1979*,1988		ZFW	E
Streaky Serin, <i>Serinus striolatus</i>	1978,1979* (FE)	J		E
Thick-billed Serin, <i>Serinus burtoni</i>	1978,1979*,1988	J	ZFW	E
African Citril, <i>Serinus citrinelloides</i>	1978* (FE)		USNM*)	
Yellow-fronted Canary, <i>Serinus mozambicus</i>	1988 (FE)		USNM*)	
Estrildidae				
Gray-crowned Blackfinch, <i>Nigrita canicapilla</i>	1978,1979*,1988	J	ZFW	E
Green Twinspot, <i>Mandingoa nitidula</i>	1979*		ZFW	
Abyssinian Crimsonwing, <i>Cryptospiza salvadorii</i>	1978,1979*			E
Red-headed Bluebill, <i>Spermophaga ruficapilla</i>	1978,1979*,1988		ZFW	
Jameson's Firefinch, <i>Lagonosticta rhodopareia</i>	1978* (FE)	J		
Black-crowned Waxbill, <i>Estrilda nonnula</i>	1978,1979*,1988	J	ZFW	E
Common Waxbill, <i>Estrilda astrild</i>	1979* (FE)		USNM*)	
Ploceidae				
Grosbeak-Weaver, <i>Amblyospiza albifrons</i>	1978* (FE)	J	USNM	
Baglafecht's Weaver, <i>Ploceus baglafecht</i>	1978,1979* (FE)	J		E
Black-billed Weaver, <i>Ploceus melanogaster</i>	1978,1979*,1988	J	ZFW	E
Brown-capped Weaver, <i>Ploceus insignis</i>	1978*,1988	J	ZFW	E
Large Golden Weaver, <i>Ploceus xanthops</i>	1979* (FE)		FW*)	
Vieillot's Black Weaver, <i>Ploceus nigerrimus</i>	1979* (FE)		ZFW*)	
Dark-backed Weaver, <i>Ploceus bicolor</i>	1978,1979*	J	USNM	
Fan-tailed Widowbird, <i>Euplectes axillaris</i>	1979* (FE)			
Sturnidae				
Stuhlmann's Starling, <i>Poeoptera stuhlmanni</i>	1978*,1979,1988	J	ZFW	E
Oriolidae				
Montane Oriole, <i>Oriolus percivali</i>	1978*,1988	J	USNM	E

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