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ABSTRACT

Situated at the border triangle of Liberia, Côte d'Ivoire and Guinea, Mount Nimba provides strong isolation due to climatic and vegetation changes along an altitudinal gradient, which have resulted in high endemism. One of the three tallest mountains in West Africa, Mount Nimba (1752 m a.s.l.) belongs to the Guinean montane forest ecoregion and is situated at the ecotone between the Guinean forest block and the Guinean savanna. Lowland forest extends up to 600 m a.s.l., replaced by montane forest (600-1200 m a.s.l.), and by edaphic altitude savanna (above 1200 m a.s.l.), a unique biotope and an endemism hotspot. Four field surveys were performed on the Guinean and Liberian sides of Mount Nimba between 2008 and 2013 and in 2017. Live traps were placed at different elevations, in different vegetation zones, and in areas with multiple land uses including protected areas and a variety of anthropogenic habitats. A total of 43 rodent species (32 genera) were collected and identified by an integrative approach combining morphology, morphometrics, cytogenetics and molecular barcoding. Observations of larger, arboreal rodents were also recorded. Edaphic savannas between 500-600 m hosted the highest species richness (11 and 14 species), followed by lowland and montane forests (8-12 species). Some species were restricted to lowland forest, i.e., *Malacomys edwardsi* Rochebrune, 1885, *Dephomys* spp., and *Typomys trivirgatus* Temminck, 1853. Others were recorded in multiple vegetation types up to 1600 m a.s.l. The Mare d'hivernage savanna site (Guinea, 1600 m a.s.l.) hosted eight species but no endemic taxa, with two synanthropic species, *Mastomys natalensis* (Smith, 1834) and *M. erythroleucus* Temminck, 1853, in both natural savannas and anthropogenic environments. In Liberia, *Rattus rattus* (Linnaeus, 1758) was collected in a peri-urban environment in close association with humans. Old collections confirm the presence of several taxa recorded in 1960s and 1970s surveys, i.e., *Uranomys ruddi* Dollman, 1909, *Oenomys ornatus* Thomas, 1911, and *Mylomys dybowski* Pousargues, 1893 (Muridae), two Nesomyidae species and some Sciuridae, Anomaluridae and Graphiuridae. The poor state of some old specimens prevented from confirming the presence of three murids, *Arvicanthis* cf. *rufinus* (Temminck, 1853), *Praomys daltoni* (Thomas, 1892) and *Lemniscomys macculus bellieri* Van der Straeten, 1975. Our surveys added at least six species, i.e., *Mastomys natalensis*, *Dephomys* cf. *eburneae* Heim de Balsac & Bellier, 1967, *Dendromus lachaisei* Denys & Aniskine, 2012, *Mus baoulei* Vermeiren & Verheyen, 1980, *Malacomys cansdalei* Ansell, 1958, and *Cricetomys gambianus* Waterhouse, 1840. Such exceptional diversity highlights the importance of the West African highlands as a uniquely important biodiversity hotspot.

KEY WORDS
West Africa,
small mammals,
forest,
savanna,
diversity,
montane.

RÉSUMÉ

Liste annotée des rongeurs d'un point chaud de biodiversité, le mont Nimba (Afrique de l'Ouest).

Situé au triple point de frontière entre la Guinée, la Côte d'Ivoire et le Liberia, le mont Nimba est fortement isolé suite aux changements climatiques et de végétation le long d'un gradient altitudinal, ce qui a conduit à un fort taux d'endémisme. L'un des trois plus hauts sommets d'Afrique de l'Ouest, le mont Nimba (1752 m a.s.l.) appartient à l'écorégion des forêts de montagne guinéennes. Il est situé à l'écotone entre le bloc de forêts guinéen et les savanes guinéennes. La forêt de plaine s'étend jusqu'à 600 m a.s.l., remplacée par la forêt de montagne (600-1200 m a.s.l.), puis la savane édaphique d'altitude (> 1200 m a.s.l.), un biotope unique et une zone d'endémisme. Quatre missions de terrain ont été réalisées sur les versants guinéen et libérien du mont Nimba entre 2008-2013 et en 2017. Nous avons utilisé différents types de pièges non-léthaux à différentes altitudes et dans différentes zones de végétation à usages multiples allant de réserves protégées à une variété d'habitats anthropisés les entourant. Nous avons collecté 43 espèces (32 genres) de rongeurs et observé plusieurs grandes espèces terrestres et arboricoles. Les espèces ont été identifiées à l'aide d'une approche intégrative combinant morphologie, morphométrie, cytogénétique et barcoding moléculaire. La plus haute richesse spécifique est observée dans les savanes édaphiques de 500-600 m (11 et 14 espèces), suivies par les forêts de plaine et de montagne sous 1200 m d'altitude (8-12 espèces). Quelques espèces sont restreintes à la forêt de plaine comme *Malacomys edwardsi* Rochebrune, 1885, *Dephomys* sp., *Typomys trivirgatus* (Temminck, 1853), les autres sont retrouvées dans tous les types de végétation jusqu'à 1600 m d'altitude. Dans le site dit de la Mare d'hivernage (Guinée, 1600 m a.s.l.), nous recensons huit espèces mais aucune endémique. Dans les savanes naturelles et les environnements anthropisés, nous avons collecté *Mastomys natalensis* (Smith, 1834) et *Mastomys erythroleucus* Temminck, 1853. Au Liberia, *Rattus rattus* a été collecté en environnement péri-urbain en association étroite avec l'homme. En examinant les collections anciennes, nous avons confirmé la présence de plusieurs taxons qui avaient été capturés dans les années 1960 et 1970, comme les Muridés *Uranomys ruddi* Dollman, 1909, *Oenomys ornatus* Thomas, 1911, *Mylomys dybowskii* Pousargues, 1893, deux espèces de Nesomyidés et quelques Sciuridés, Anomaluridés et Graphiuridés. Le mauvais état de préservation de certains spécimens anciens ne nous a pas permis de confirmer la présence de trois Muridés : *Arvicanthis* cf. *rufinus* (Temminck, 1853), *Praomys daltoni* (Thomas, 1892) et *L. macculus bellieri* Van der Straeten, 1975. Nos relevés récents permettent d'ajouter six espèces nouvelles pour le mont Nimba (*Mastomys natalensis*, *Dephomys* cf. *eburnea* Heim de Balsac & Bellier, 1967, *Dendromus lachaisei* Denys & Aniskine, 2012, *Mus baoulei* Vermeiren & Verheyen, 1980, *Malacomys cansdalei* Ansell, 1958, *Cricetomys gambianus* Waterhouse, 1840). Cette diversité exceptionnelle met en évidence l'importance de la région des montagnes ouest-africaines comme point chaud unique de biodiversité.

MOTS CLÉS
Afrique de l'Ouest,
petits mammifères,
forêt,
savane,
diversité,
montagne.

INTRODUCTION

Rodents represent the most diverse order of mammals. In tropical Africa they are present in all habitats and constitute the bulk of the terrestrial small mammal diversity (Happold 2013). In West Africa, the Guinean rain forest block (extending from Sierra Leone, via Guinea and Côte d'Ivoire, to Ghana) has been identified as one of 25 global biodiversity hotspots (Myers *et al.* 2000). It harbours an exceptional diversity which is far from being fully quantified and many cryptic or new small mammal species have been recognized and recently studied (Nicolas *et al.* 2009, 2020; Denys & Aniskine 2012; Jacquet *et al.* 2012; Monadjem *et al.* 2016, 2019, 2021; Mamba *et al.* 2021; Denys *et al.* 2021) in this area.

Situated at the border triangle of Liberia, Côte d'Ivoire and Guinea, Mount Nimba may play an important role in promoting biodiversity (White 1981), as it is isolated by climate and vegetation from the lowlands surrounding the mountain (Coe 1975). Afromontane zones are considered challenging environments that are highly vulnerable to global change (Taylor *et al.* 2016). Mount Nimba (1752 m above sea level) is the third highest peak in West Africa after Mount Loma Mansa (1942 m a.s.l.) and Sankan Biriwa peaks in the Tingi Hills in Sierra Leone (1800-1850 m a.s.l.) in Sierra Leone. It is situated in the ecotone zone between the West African rain forest block and the Guinean savanna to the north, which is known to be a biogeographic barrier playing an important role in speciation events (Schilthuizen 2000; Mamba *et al.* 2021). Previous work on Mount Nimba has shown the existence of an altitudinal stratification of the vegetation, as observed in other highlands of Africa. At Mount Nimba, between 600 m and 1200 m there is a gradual transition from lowland rain forest to montane forest, above which a unique montane grassland occurs. At various elevations, edaphic savannas develop in lateritic soils and are interdigited with lowland or montane forest (Coe 1975; Lamotte & Roy 2003). These edaphic savannas constitute a very unique biotope that includes several endemic taxa of plants (Wieringa & Poorter 2004), invertebrate and vertebrate species, like the Western Nimba Toad (*Nectophrynoides occidentalis* Angel, 1943), the Nimba otter-shrew (*Micropotamogale lamottei* Heim de Balsac, 1954), the climbing mouse (*Dendromus lachaisei* Denys & Aniskine 2012), and Lamotte's leaf-nosed bat (*Hipposideros lamottei* Brosset, 1985). To preserve this area, Mount Nimba Strict Nature Reserve was declared a national park and a UNESCO World Heritage. This reserve is now on the List of World Heritage in danger of UNESCO (https://whc.unesco.org/en/activities/1058) because this ecosystem is currently highly threatened by intensive human activities like extension of the agriculture (cocoa, coffee, rubber tree and oil palm), timber trade, lumber industry, poaching and iron ore exploitations and explorations, since the 1960's (Lamotte 1983) with further exploitation proposed in the coming years.

Descriptions of the rodents of the Guinean side of Mount Nimba were made by Heim de Balsac & Lamotte (1958). Subsequently, collections were made on the Liberian side of the massif by Coe (1975), Misonne & Verschuren (1976), and Gautun *et al.* (1986). Based on these papers, many species of rodents have been recorded from Mount Nimba (Table 1), however, little is known about their distributions and life histories. In the course of various biodiversity assessements performed beween 2008 and 2013, on both the Guinean and Liberian sides of Mount Nimba, we were able to confirm new rodent records for this region. These specimens, housed in the Muséum national d'Histoire naturelle (MNHN) in Paris and the Durban Natural Science Museum (DM), represent a unique opportunity to update and synthesize our knowledge of the distribution and natural history of the rodent species in this poorly known biodiversity hotspot. Moreover, a re-examination of specimens from previous MNHN and NMK (Natural Museum of Kenya) collections, allows us to revise rodent identifications and species attributions.

Hence, the main aim of this paper is to update and synthesize all available data on the rodent species present at Mount Nimba by: 1) presenting the results of out recent taxonomic surveys on the Guinean and Liberian sides of the mountain; and 2) providing updated morphological and genetic characters that can be used to identify these species. To achieve this we are taking into consideration recent taxonomic inventories, phylogenetic revisions and specimens collected during previous decades deposited in various museum collections. Furthermore, we provide a global assessment of the rodent diversity and of conservation importance of Mount Nimba compared to other afromontane zones of West and Central Africa.

MATERIAL AND METHODS

Mount Nimba is a World Heritage site and a Biosphere Reserve of UNESCO that comprises an island of montane savanna interwoven with Upper Guinea forests at lower elevations. To better understand the rodent diversity we sampled different habitats on the Guinean and Liberian sides of Mount Nimba during four field surveys over a 6-year period. Small rodent species were captured with Sherman (23 × 9 × 8 cm, spaced 5-10 m apart during 1 to 3 nights) and pitfall traps set between 8 to 20 nights. The Sherman traps were placed along transects and were baited with either palm nut shavings or a mixture of dry fish and peanut butter. A few traps were baited with other foodstuff such as cassava. Traps were checked shortly after sunrise each morning. The pitfall trap transects included five to 20 buckets per transect, separated by 5-10 m with a drift fence made of thick black plastic sheeting (0.75 cm tall and dug one or two centimeters into the ground) connecting the buckets. Some 20 single door squirrel-size Tomahawk live traps were also used in Liberia in 2013 and baited with palm nuts and dry fish, peanut butter and bread. Larger rodents like Sciuridae Fischer de Waldheim, 1817, Anomaluridae Gervais, 1849 and Hystricidae G. Fischer, 1817 were either captured with camera traps or observed directly or recorded indirectly by other signs such as porcupine quills.

Table 1. — Summary of the sampling of rodents in Mission 1 (Guinean side of Mount Nimba), based on the localities (transects **TR**), with additional information on the date of survey, habitat description (P. Poilécot, pers. com.), GPS coordinates, elevation (meters above sea level), number of rodent captures (**RC**), number of trap nights (**TN**) and rodents trapping success (**TS**). **PFA** to **G**: pitfall traplines; **SHA** to **V**: Sherman traplines.

Date	TR	Locality	Coordinates	Elevation (m a.s.l.)	Habitat	RC	TN	TS
Dry season								
III-IV.2008	SHA	Serengbara	7°58'11"N, 8°26'59"E	604	Secondary forest	1	150	0.67
III-IV.2008	SHB	Serengbara	7°58'11"N, 8°26'59"E	589	Secondary forest	3	150	2.00
III-IV.2008	SHC	Serengbara	7°58'11"N, 8°26'59"E	580	Cultivated swamp	11	250	4.40
III-IV.2008	SHD	Serengbara	7°58'11"N, 8°26'59"E	580	Cultivated swamp	9	150	6.00
III-IV.2008	SHE	Serengbara	7°58'11"N, 8°26'59"E	604	Secondary forest	5	150	3.3
III-IV.2008	SH Camp	Serengbara	7°58'11"N, 8°26'59"E	475	Secondary forest	9	150	6.00
III-IV.2008	PFA	Serengbara	7°58'11"N, 8°26'59"E	475	Secondary forest	3	80	3.8
III-IV.2008	PFB	Serengbara	7°58'11"N, 8°26'59"E	604	Secondary forest	4	100	4.00
III-IV.2008	PFC	Gbié	7°37'47"N, 8°19'48"E	621	Edaphic savanna	2	60	3.33
III-IV.2008	PFD	Gbié	7°37'47"N, 8°19'48"E	649	Edaphic savanna	0	60	0.00
III-IV.2008	SHF	Gbié	7°39'0"N, 8°19'48"E	621	Gallery forest	1	50	2.00
III-IV.2008	SHG	Gbié	7°37'47"N, 8°19'48"E	628	Savanna	2	150	1.3
III-IV.2008	SHH	Gbié	7°37'47"N, 8°19'48"E	628	Savanna	3	150	2.00
III-IV.2008	SHI	Gbié	7°37'47"N, 8°19'48"E	608	Cultivated swamp	25	150	16.7
III-IV.2008	SHJ	Gbié	7°37'47"N, 8°19'48"E	600	House in savanna	4	50	8.00
III-IV.2008	PFE	Gouan	7°40'11"N, 8°22'11"E	1200	River Gouan bank	4	120	3.3
III-IV.2008	PFF	Gouan	7°40'11"N, 8°22'11"E	1212	Gallery forest	13	120	10.8
III-IV.2008	PFG	Biosphere reserve	7°40'11"N, 8°22'11"E	1642	Mare d'hivernage, altitude savanna	9	120	7.50
III-IV.2008	SHK	Gouan	7°40'11"N, 8°22'11"E	1250	Gallery forest	9	440	21
III-IV.2008	SHL	Gouan	7°40'11"N, 8°22'11"E	1236	Ecotone gallery forest.burnt Protea savanna	22	200	11.00
III-IV.2008	SH M & N	Gouan	7°39'0"N, 8°22'11"E	1240	Protea savanna	0	40	0.00
III-IV.2008	SHO	Biosphere reserve	7°40'11"N, 8°22'11"E	1642	Savanna	7	80	8.8
III-IV.2008	SHP	Biospheren reserve	7°40'11"N, 8°22'11"E	1642	Savanna	5	180	28
III-IV.2008	SHQ	Pierré Richaud	7°40'47"N, 8°21'35"E	1639	Ecotone mountain forest.altitude savanna	0	80	0.00
III-IV.2008	SHR	Pierré Richaud	7°40'47"N, 8°21'35"E	1639	Ecotone mountain forest.altitude savanna	1	40	2.50
III-IV.2008	SHS	Gouan	7°39'0"N, 8°22'11"E	1236	Andropogon savanna	2	100	2.00
III-IV.2008	SHT	Gouan	7°40'11"N, 8°20'59"E	1236	Gallery forest	2	150	1.3
III-IV.2008	SHU	Bassin 1	7°39'0"N, 8°22'11"E	1451	Intact Protea savanna	0	180	0.00
III-IV.2008	SHV	Zié	7°40'11"N, 8°22'11"E	581	Gallery forest Zie river	6	50	12.00
Wet season								
X.2008	PFA	Biosphere reserve	7°40'11"N, 8°22'11"E	1616	Mare d'hivernage, altitude savanna	10	140	7.1
X.2008	PFB	Gouan	7°40'11"N, 8°22'11"E	1176	Gallery forest Gouan river	0	140	0.00
X.2008	SHA	Biosphere reserve	7°40'11"N, 8°22'11"E	1616	Mare d'hivernage, altitude savanna	10	350	2.9
X.2008	SHB	Biosphere reserve	7°40'11"N, 8°22'11"E	1615	Mare d'hivernage, altitude savanna	4	300	1.3
X.2008	SHC	Biosphere reserve	7°40'11"N, 8°22'11"E	1616	Mare d'hivernage, altitude savanna & Shrubs	0	100	0.00
X.2008	SHD	Gouan	7°40'11"N, 8°20'23"E	1206	Gallery forest	12	553	2.2
X.2008	SHE	Gouan	7°39'0"N, 8°22'11"E	1209	Ecotone gallery forest. Protea savanna	17	280	6.1
X.2008	SHF & G	Pierré Richaud	7°40'47"N, 8°21'35"E	1622	Ecotone mountain forest. altitude savanna	1	180	0.6
X.2008	SHH	Gouan	7°40'11"N, 8°22'11"E	1267	Zié Spring	8	100	8.00
X.2008	SHI	Gouan	7°40'11"N, 8°22'11"E	1201	Zié spring	0	92	0.00
X.2008	SHJ	Serengbara	7°58'11"N, 8°26'59"E	604	Secondary forest	0	65	0.00
X.2008	SHK	Serengbara	7°58'11"N, 8°26'59"E	589	Secondary forest	0	200	0.00
X.2008	SHL	Serengbara	7°58'11"N, 8°26'59"E	586	Secondary forest,swamp	2	120	1.67
X.2008	SHM	Serengbara	7°58'11"N, 8°26'59"E	586	Swamp	1	200	0.50
X.2008	SHN	Serengbara	7°58'11"N, 8°26'59"E	580	Cultivated swamp	1	200	0.50
X.2008	SHP & Camp	Serengbara	7°58'11"N, 8°26'59"E	580	Secondary forest	2	105	1.90
X.2008	PFC	Serengbara	7°58'11"N, 8°26'59"E	580	Secondary forest	1	100	1.00
X.2008	PFD	Serengbara	7°58'11"N, 8°26'59"E	589	Secondary forest	2	75	2.7
X.2008	SHO	Serengbara	7°58'11"N, 8°26'59"E	586	Secondary forest	4	200	2.00
X.2008	PFE	Gbié	7°39'0"N, 8°19'48"E	552	Gallery forest	9	108	8.3
X.2008	PFF	Piedmont Sempéré	7°40'47"N, 8°21'35"E	612	Ecotone gallery forest.savanna	0	40	0.00
X.2008	SHR	Gbié	7°37'47"N, 8°19'48"E	596	Savanna	0	180	0.00

Table 1. — Continuation.

Date	TR	Locality	Coordinates	Elevation (m a.s.l.)	Habitat	RC	TN	TS
X.2008	SHS& T	Gbié	7°37'47"N, 8°19'48"E	595	Edaphic savanna	7	600	1.2
X.2008	SHQ	Gbié	7°37'47"N, 8°19'48"E	573	Swamp	8	360	2.2
X.2008	SHV	Ziéla	7°42'0"N, 8°20'59"E	581	Gallery forest Zié river	1	30	3.3
XII.2009 -I.20I0	SHA	Ziela	7°42'0"N, 8°20'59"E	542	Houses	34	225	15.1
XII.2009 -I.20I0	SHB	Ziela	7°42'0"N, 8°20'59"E	580	Gallery forest	1	240	0.4
XII.2009 -I.20I0	PFC	Ziela	7°42'0"N, 8°20'59"E	581	Gallery forest Zié river	0	0	0.00
XII.2009 -I.20I0	SHD	Ziela	7°42'0"N, 8°20'59"E	550	IFAN research station	13	200	6.50
XII.2009 -I.2010	SHE	Ziela	7°42'0"N, 8°20'59"E	581	Lowland forest	4	320	1.3
XII.2009 -I.2010	SHF	Gblayougouma	7°45'0"N, 8°20'59"E		Houses	25	222	11.3
XII.2009 -I.2010	SHG	Ziela	7°42'0"N, 8°20'59"E	550	Cultivated fields	2	84	2.4
Total	60					341	9979	

Mission 1: Sampling on the Guinean side of Mount Nimba (March and October 2008)

Our fieldwork on the Guinean side of Mount Nimba was conducted during the dry (February-March 2008) and wet (October 2008) seasons, resulting in the total capture of 341 rodents. During the dry and the wet seasons, we placed georeferenced transects of Sherman and pitfall traps at five localities (Gbie, Gouan, Serengbara, Gblayougouma and Ziela; Table 1). We ensured that all the various habitats encountered at Mount Nimba were sampled, i.e., lowland and montane rain forests, edaphic (high elevation) savanna, and anthropogenic habitats at different elevations between 600-1600 m (Table 1). The habitat description of the five localities presented in Table 1 was performed by the late Pierre Poilécot.

Mission 1: botanical descriptions of the Guinean localities

A summarised vegetation description was made in March 2008 by Pierre Poilecot (pers. comm.) for five of our localities (see Table 1), which are presented below. These descriptions were made following only the dry season transects and do not include detailed information for each trapline but rather the vegetation was divided into broad categories as discussed below.

Serengbara (sampled during 11-18 February 2008 and 5-11 October 2008; Fig. 1). Situated on Thuo cliff, at the main entrance of the central area of Mount Nimba, below Mount Richard Mollard, 3.5 km north-east of Serengbara village. This site was selected for its low altitude (594 m) and homogeneous secondary forest, that had previously been cultivated as well as for swamp forests. The Sherman traplines A, B, D and E and the Pitfall line A & B were placed in a dense mesophyllous secondary forest in regeneration. The dominant stratum was composed of: *Antiaris toxicaria* Lesch., 1810, *Parkia bicolor* A.Chev., *Canarium schweinfurthii* Engl., *Piptadeniastrum africanum* (Hook.f.) Brenan, *Petersianthus macrocarpus* (P.Beauv.) Liben, *Terminalia superba* Engl. & Diels, 1900, *T. ivorensis* A.Chev., *Chlorophora regia* A.Chev., *Albizia ferruginea* (Guill. & Perr.) Benth., *Ceiba pentandra* (L.) Gaertn., *Chrysophyllum africanum* A.DC., *Bombax buonopozense* Beauverd, *Aubrevillea platycarpa* Pellegr., *Bosqueia phoberos* Baill., *Afromorus mesozygia* (Stapf) E. M. Gardner, *Pycnanthus angolensis* (Welw.) Warb. The middle and lower strata included: *Bridelia grandis* Pierre ex Hutch., *Alstonia boonei* De Wild., *Sterculia tragacantha* Lindl., *Napoleonaea leonenis* Hutch. & Dalziel, *Aidia genipiflora* (DC.) Dandy, *Musanga cecropioides* R.Br. ex Tedlie, *Anthocleista nobilis* G. Don, *Tetrorchidium didymostemon* (Baill.) Pax & K.Hoffm., *Erythroxylum mannii* Oliv., *Elaeis guineensis* A.Chev., *Carapa procera* DC., *Anopyxis klaineana* (Pierre) Engl., *Funtumia latifolia* (Stapf) Schltr., *Trichilia heudelotii* Planch., *Millettia zechiana* Harms, *Albizia zygia* (DC.) J. F.Macbr., *Alchornea cordifolia* (Schumach. & Thonn.) Müll.Arg., *Morinda lucida* Benth., *Vismia guineensis* Druce, 1917, *Psydrax subcordata* (DC.) Bridson, *Bussea occidentalis* Hutch., *Macaranga hurifolia* Beille. The herbaceous stratum was constituted of: *Aframomum melegueta* K. Schum., *Costus afer* KerGawl., *Hypselodelphys poggeana* (K. Schum.) Milne-Redh., *Marantochloa purpurea* (Ridl.) Milne-Redh., *Leea guineensis* G. Don (suffrutrex), *Oplismenus hirtellus* (L.) P. Beauv., *Leptaspis zeylanica* Nees ex Steud., *Olyra latifolia* L., *Paullinia pinnata* L. (liana) and *Mussaenda heterophylla* Schumach. & Thonn. (liana).

The Sherman C transect was installed in a degraded cultivated swamp with *Raphia hookeri* G. Mann & H. Wendl., *Hallea ledermannii* (K. Krause) Verdc., *Musanga cecropioides*, *Alchornea cordifolia*, *Millettia zechiana*, *Albizia zygia*, *Deinbollia pinnata* (Poir.) Schumach. & Thonn., *Phyllanthus muellerianus* (Kuntze) Exell and *Ficus exasperate* Vahl. The herbaceous stratum was composed of: *Hypselodelphys poggeana*, *Leea guineensis* (suffrutex), *Aframomum melegueta*, *Nephrolepis biserrata* (Sw.) Desv. and *Pteris atrovirens* Willd.

The Sherman transects D, E were in a gallery forest close to the river Bangué was dominated by the following plants: *Raphia hookeri*, *Elaeis guineensis*, *Terminalia ivorensis*, *Triplochiton scleroxylon* K. Schum., *Macaranga schweinfurthii* Pax, *Albizia adianthifolia* (Schumach.) W. Wight, *A. ferruginea* (Guill. & Perr.) Benth., *Pseudospondias microcarpa* (A. Rich.) Engl. and *Pycnanthus angolensis*. The herbaceous layer was entirely composed of *Hypselodelphys poggeana* and *Aframomum melegueta.*

Gbié (sampled from 18 to 24 February and from 11 to 18 October 2008; Fig. 2). Situated at 6 km from Gbié village, on the eastern side of Pierré Richaud and Sempéré, at 621 m altitude, an edaphic savanna was investigated during two weeks.

FIG. 1. — Serengbara trap transects habitats: **A**, sherman C; **B**, sherman D; **C**, degraded swamp with raphia sherman D and E: dense mesophylous secondary forest in regeneration; **D**, pitfall B. Photos: C. Denys.

The Sherman I transect was placed in a rice fallow in a "bas fond" (low lying depression) and comprized regenerating species of trees such as: *Hallea ledermannii*, *Alchornea cordifolia*, *Pseudospondias microcarpa*, *Ficus capensis* Thunb., *Entada walbergii* Harv. (liana), *Combretum platypterum* (Welw.) Hutch. & Dalziel (liana), *Harungana madagascariensis* Lam. ex Poir., *Syzygium guineense* (Willd.) DC., and *Desmodium salicifolium* (Poir.) DC. The herbaceous strata included: *Imperata cylindrica* (L.) Raeusch. (dominant), *Panicum laxum* Hack. (dominant), *Chromolaena odorata* (L.) R. M. King & H. Rob., *Aspilia Africana* (Pers.) C. D.Adams, and *Scleria racemose* Poir.

The Sherman F transect was set on fallow land (old cultivated rice and peanut fields) with: *Hallea ledermannii*, savanna and degraded forest with lianas. The main species observed were: *Holarrhena floribunda* (G. Don) T. Durand & Schinz, *Albizia zygia*, *A. adianthifolia*, *Chlorophora regia* (régénération), *Harrissonia abyssinica* Oliv., *Gaertnera paniculate* Benth., *Pentaclethra macrophylla* Benth., *Zanthoxylum leprieurii* Guill. & Perr., *Sterculia tragacantha*, *Combretum platypterum* (liane), *Premna hispida* Benth., *Psychotria vogeliana* Benth., *Markhamia tomentosa* (Benth.) K. Schum. ex Engl., *Ficus sur* Forssk. (1775), *Sarcocephalus latifolius* (Sm.) E. A. Bruce, *Alchornea cordifolia*, *Margaritaria discoidea* (Baill.) G. L. Webster, and *Mezoneuron benthamianum* Baill. (liana). The herbaceous strata were poor and constituted of: *Aframomum melegueta*, *Oplismenus hirtellus*, *Olyra latifolia*, and *Chromolaena odorata.*

Two Sherman transects G and H were installed at the forest/savanna ectotone on the laterite cap. The following plants were recorded here: *Margaritaria discoidea*, *Alchornea cordifolia* (abundant), *Sterculia tragacantha*, *Bridelia ferruginea* Benth., *Sarcocephalus latifolius*, *Carapa procera*, *Holarrhena floribunda*, *Albizia zygia*, and *Vitex doniana* Sweet. The herbaceous strata contained *Melinis minutiflora* P. Beauv. and *Chromolaena odorata*. The herbaceous strata were regenerating after fire and had *Loudetia arundinacea* (Hochst. ex A. Rich.) Hochst. ex Steud. (green), *Afrotrilepis pilosa* (Boeckeler) J. Raynal and *Bulbostylis laniceps* C. B. Clarke ex T. Durand & Schinz (Cyperaceae) in flower.

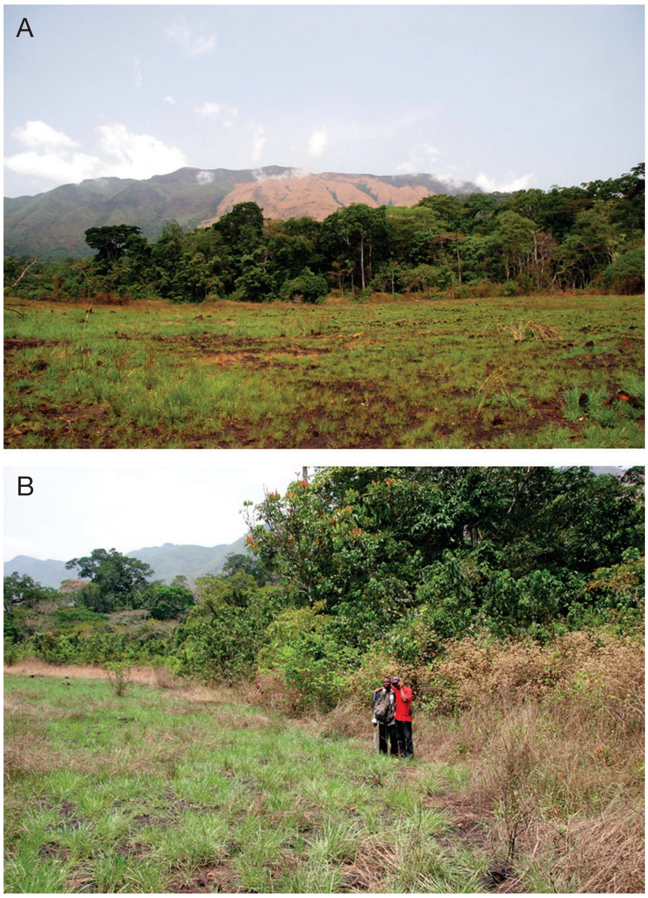

Fig. 2. — Gbié trapping transects habitats: **A**, **B**, Edaphic Savanna and ecotone with forest in shermans G and H transects with regenerating Loudetia after a fire. Photos: C. Denys.

Gouan (from 24 February to 4 March 2008 and from 27 September to 4 October 2008) (Fig. 3). Inside the mining concession (SMFG: Société des Mines de Fer de Guinée), close to Gouan river spring at 1200 m. a.s.l., we investigated a gallery forest (transects K and T) in a deep valley with: *Parinari excelsa* Sabine and *Syzygium guineense var. occidentale*. The dominant strata also included *Uapaca togoensis* Pax, *Synsepalum cerasiferum* (Welw.) T. D.Penn., *Albizia zygia*, *Alstonia boonei*, and *Ceiba pentandra* (L.) Gaertn. The medium stratum was composed of: *Carapa procera*, *Eugenia leonensis* Engl. & Brehmer, *Anthocleista nobilis*, *Trichilia heudelotii*, *Trichoscypha oba* Aubrév. & Pellegr., *Garcinia polyantha* Oliv., *Craterispermum laurinum* (Poir.) Benth., *Drypetes chevalieri* Beille ex Hutch. & Dalziel, *Warneckea fascicularis* (Planch. ex Benth.) Jacq. -Fél., *Memecylon polyanthemos* Hook.fil., *Zanthoxylum leprieurii*, *Campylospermum flavum* (Schumach.) Farron, *Ochna membranacea* Oliv., and *Psychotria vogeliana*.

Some herbaceous plants like *Aframomum alboviolaceum* (Ridl.) K. Schum. and *Marantochloa purpurea* were associated with Pteridophytes including *Lonchitis currori* (Hook.) Mett. ex Kuhn, *Marattia fraxinea* Sm. or *Nephrolepis cordifolia* (L.) C. Presl and the grasses (Poacea) *Oplismenus burmanni* (Retz.) P.Beauv. and *Olyra latifolia*. The tree-fern *Cyathea manniana* Hook. was common on the Gouan riverbed.

Here we also sampled the *Andropogon* L. savanna (Transect U). This savanna had been unburnt for many years and is constituted exclusively of *Andropogon macrophyllus* Stapf (robust perrenial Poaceae) among which grasses such as *Hyparrhenia subplumosa* Stapf and *Panicum sadinii* (Vanderyst) Renvoize are dispersed. Rare small trees like *Bridelia ferruginea*, *Albizia adianthifolia*, *Margaritaria discoidea*, *Dissotis jacquesii* A. Chev. and *Kotschya ochreata* (Taub.) Dewit & P. A. Duvign. were detected. Small bushes developed on rocks and included *Harungana madagascariensis*, *Premna hispida*, *Albizia zygia* and *Maragritaria discoidea.* This type of savanna reached 1400 m a.s.l., above which it is replaced by submontane savanna containing *Loudetia kagerensis* (K. Schum.) C. E. Hubb.

Above 1400 m, we placed traps in the so-called Mare d'hivernage site (between Mount To and Sempéré) as well as on the Pierré Richaud crest, at the contact between a gallery forest with

FIG. 3. — Habitats at Gouan: **A**, *Parinari* forest (transects K and T); **B**, *Andropogon macrophyllus* savanna (Transect U); **C**, Mare d'hivernage, Top: *Loudetia kagerensis* (K.Schum.) C.E.Hubb. savanna (green), bottom: bush with *Pteridium aquilinum* (L.) Kuhn (transect O); **D**, *Protea madiensis* Engl. savanna Basin 1 (Transect V). Photos: C. Denys.

Parinari excelsa and *Loudetia kagerensis* savanna (1667 m a.s.l.). Only the Mare d'hivernage and the *Loudetia* savanna had previously been sampled (Gautun *et al.* 1986).

The Mare d'hivernage site (transects O, P, G) was represented by 3 vegetation types. First, the depressed zone, dry in February, surrounded by *Loudetia kagerensis* savanna. Secondly, we also observed bush species resulting from a forest destroyed in the 1970's in regeneration and third an herbaceous bush with suffrutex (or subshrub) participating to the forest regeneration.

The *Loudetia kagerensis* savanna was in regeneration after fires. The following grasses were present: *Elionurus muticus* (Spreng.) Kuntze, *Rhytachne glabra* (Gledhill) Clayton, *Panicum ecklonii* Nees, *Sporobolus subulatus* Hack., *Andropogon mannii* Hook.f., and *Melinis minutiflora*. With the latter were associated *Vernonia nimbaensis* C. D. Adams, *Helichrysum mechowianum* Klatt and *Cyperus niveus var. tisserantii* (Cherm.) Lye, locally with *Afrotrilepis pilosa* (touradons) and *Eriosema parviflorum* E. May. subsp. *parviflorum* on gravel. The tree bush was burnt and is composed mainly of *Craterispermum laurinum* and *Eugenia leonensis*. A very dense bush was associated with the tree bush and was constituted of *Hyptis spicigera* Lam., *Harungana madagascariensis*, *Pteridium aquilinum* (L.) Kuhn, *Droogmansia scaettaiana* A. Chev. & Sillans, *Aspilia africana*, *Panicum sadinii*, *Setaria megaphylla* (Steud.) T. Durand & Schinz, *Rubus felletae* A. Chev., *Dissotis grandiflora* (Sm.) Benth., and *Dissotis jacquesii*. Some *Pteridium aquilinum* were bordering the bush at the contact with *Loudetia kagerensis* savanna.

In the "Bassin 1" site a remarkable *Protea madiensis* var. *occidentalis* (Beard) Chisumpa & Brummitt (1 451 m a.s.l.) bush savanna was surveyed (Transect U). Other trees were associated with the *Protea* L., in particular *Bridelia ferruginea*, *Albizia adianthifolia*, *Trema orientalis,* (L.) Blume, *Ficus sur* and *Dissotis jacquesii*. The herbaceous stratum is dense and dominated by *Loudetia kagerensis* associated with *Melinis minutiflora*, *Monocymbium ceresiiforme* (Nees) Stapf and *Schizachyrium* Nees sp. Some other species like *Vernonia nimbaensis*, *Phyllanthus alpestris* Beille, *Hypolytrum cacuminum* Nelmes, and *Aspilia africana* are scattered among the herbs. Where rocks emerge, we found *Afrotrilepis pilosa*, *Polystachya microbambusa* Kraenzl. and *Abildgaardia congolensis* (De Wild.) Lye.

Ziéla and Glabouyouma (4 to 5 March 2008, 17 to 18 October 2008 and 27 December 2009 to 10 January 2010). Ziéla is situated in the IFAN (ancient Institut Français d'Afrique Noire) Research Station land in secondary forest at 581 m altitude, Glabouyouma is a small village at the foot of Mount Nimba. The riverine forest of the Zié river was an important trapping habitat because the locality was mentioned by

Heim de Balsac & Lamotte (1958) and numerous MNHN specimens, including holotypes that had been collected there.

During these missions Sherman traps were placed in transect V (along the gallery forest close to Ziela river and IFAN station. Shermans traps were also deployed in houses, secondary forests and cultivated fields both in Ziela and Glabouyouma villages (Table 1) (transects A to G from 2009/2010).

Missions 2, 3 and 4: Sampling on the Liberian side of Mount Nimba (2011-2012; 2013 and 2017)

Three separate sets of fieldwork were conducted in the Liberian side of Mount Nimba. Mission 2 & 4 surveys were performed in the Arcelor Mittal mining concession (2011-2012, 2017) and Mission 3 in its surroundings in 2013.

Mission 2: ArcelorMittal Liberia Concession survey (17 December 2011 to 11 January 2012)

In 2011-2012, we used the standard technique of transects (Sherman live traps baited with palm nut shavings) left for two consecutive nights in different types of habitats. These surveys were focussed on three main areas: 1) the proposed tailings management facility and retention dam (TMF) for the future Mount Grangra excavation site (where mining has since commenced); 2) the proposed West Nimba Nature Reserve (W Nimba) that remains unprotected to date; and 3) the proclaimed East Nimba Nature Reserve (ENNR). Additional sites included riparian vegetation along the Yiti River and human settlements in and around Yekepa (see Table 2). Pitfall traps were also employed at some of these sites (Table 2). Most transects consisted of 22 trap stations, with one Sherman live trap per station. The location of the 19 rodent sampling sites were similar to those figured for the shrew collections and are available in Denys *et al.* (2021) and described in Table 2. The total trapping effort for this study totalled 986 trap-nights for a total of 108 rodent captures. No rodent was trapped inside pitfalls and 92 captures were released after processing.

Mission 3: Environmental and Social Impact Assessment (ESIA) Nimba Iron Ore Liberia: 17 March to 5 April 2013

A second rodent inventory at low altitude along the railway project to link Saniquellie town to Yekepa at the Guinean border took place in March-April 2013 during the early wet season (Table 3). This allowed the capture of 135 rodents with a total trapping effort of 4646 trapnights. At the various sites Sherman and pitfall traps were employed as on the Guinean side.

We were not able to describe the vegetation on the Liberian side of Mount Nimba in the same detail as on the Guinean side, but we illustrate the main trapping habitats in Figure 4. As shown on Figure 4, we surveyed for rodents in a variety of habitats, including rainforest, secondary (disturbed) forest, gallery forest, riparian vegetation along permanent waterbodies, or burnt or intact edaphic savannas. In Zolowee village we placed traps inside and outside houses and in surrounding rice fields (situated in a swamp with ferns). The secondary forest was cultivated with rubber, pineapples, coffee, and bananas. In Camp 4 we surveyed a secondary forest surrounding a *Raphia* and a thicket surrounding a permanent water pool. Small patches of primary forest remained in the East Nimba Nature Reserve (ENNR). A botanical survey performed in 2010 showed some differences between the Guinean and Liberian Nimba vegetation communities. On the Liberian side of Mount Nimba, the lowland-medium elevation zones (below 800 m) were covered by degraded moist evergreen forest characterized by two endemic trees: *Guibourtia leonensis* J.Léonard and *Tessmannia baikiaeoides* Hutch. & Dalziel (both species of high conservation priority). Similarly, at higher elevations (above 800 m), a rich secondary forest had developed, which was strongly modified compared to the earlier botanical studies of the 1960s, and it appeared different from the high elevation forest on the Guinean side of the mountain. This was possibly the result of disturbance from previous mining activities

Mission 4: Camera trap study on the Liberian side of Mount Nimba (12 January to 24 February 2017)

We deployed a total of 17 Bushnell and 7 Reconyx camera traps at the Blei Community Forest, on the southern edge of Mount Nimba, Liberia. Blei Forest comprised 639 ha of relatively intact forest that fell under the ArcelorMittal Liberia Concession and was managed by them. These 24 camera traps were set in a grid formation, approximately 500 m apart. Each camera was placed around 1 to 2 m above the ground, usually along a game trail. The cameras were all active and recording for a 6-week period, at the end of which they were collected from the field and all images downloaded from the SD cards. Where possible, small mammals were identified to species. All cameras were set at an elevation between 600 and 650 m a.s.l.

Rodent trapping success calculations methodology

The trapping success, expressed as a percentage, was obtained by dividing the number of rodent captures by the number of trapnight (number of traps × number of nights trapped) × 100. The trapping success is here presented per trap transect and the overall trapping success per locality is the sum of the rodent captures divided by the sum of the trap nights.

Taxonomy, identification and measurements

All the animals captured were taken to the field camp and euthanized the same day by cervical dislocation following the ethical procedures mentioned in Sikes *et al.* (2016). Standard external measurements (head and body length (HB), tail length (TL), ear length (E) and hindfoot length (HF)) were taken to the closest millimeter, body mass (W) was taken to the closest gram, and the sex and reproductive condition were noted. Due to the existence of several sibling species, the identification of many of the rodents was not possible using external characteristics only. Moreover, the systematics and taxonomy of numerous species groups is still unresolved (Monadjem *et al.* 2015). Thus, most captured rodents were taken as specimens and deposited in a museum. Tissues samples (muscle or liver) were kept in 95% ethanol for molecular studies. The carcasses

Table 2. — Summary of the habitat characteristics of the sampling sites in Arcelor Mittal concession during Mission 2 in Liberia where Sherman and Pitfall live traps were placed for the capture of rodents, listed in chronological order: **TR**, transect; **TMF**, tailings management facility; **ENNR**, East Nimba Nature Reserve; **SH**, sherman; **PF**, pitfall; **RC**, rodent captures; **TN**, trap nights; **TS**, trapping success only for rodents.

Date	TR	Locality	Coordinates	Elevation (m a.s.l.)	Habitat	RC	TN	TS
17-18.XII.2011	SH TMF 1	Tailings area, SW	7°28'11"N, 8°39'0"W	381	Secondary forest	18	78	23.1
19-20.XII.2011	SH TMF 2	Tailings area, central	7°28'48"N, 8°39'0"W	475	High forest	12	88	13.6
20-24.XII.2011	PF TMF2	Tailings area, central	7°28'48"N, 8°39'0"W	475	High forest	0	80	0
21-22.XII.2011	SH TMF 4	Tailings area, NE	7°29'24"N, 8°38'24"W	494	Disturbed secondary forest	11	88	12.5
23-24.XII.2011	SH TMF 7	Retention Dam	7°28'48"N, 8°39'0"W	467	Secondary forest	15	88	17.1
26-27.XII.2011	SH ENNR 11	Old Mine, summit	7°30'35"N, 8°31'47"W	1350	Grassland.forest mosaic	1	88	1.1
27.XII.2011-1.I.2012	PF ENNR14	Old Mine, near summit	7°31'48"N, 8°31'11"W	1188	High Forest	0	70	0
28-29.XII.2011	SH ENNR 15	Old Mine road	7°32'24"N, 8°31'11"W	1064	High forest	6	88	6.8
28.XII.-2.I.2012	PF ENNR 15	Old Mine road	7°32'24"N, 8°31'11"W	1064	High forest	0	60	0
30-31.XII.2011	SH ENNR 16	Old Mine, near base	7°32'24"N, 8°32'23"W	690	High forest	8	88	9.1
1-2.I.2012	SH Yiti 4	Grassfield, Yiti river	7°30'0"N, 8°35'23"W	491	Grassland forest mosaic	9	88	10.2
30.XII.2011-4.I.2012	PF Settlement 6	Yekepa	7°33'35"N, 8°32'23"W	515	Swamp	0	60	0
3-5.I.2012	SH Settlement 6	Yekepa	7°33'35"N, 8°32'23"W	515	Swamp.grassland mosaic	3	88	3.4
3-5.I.2012	SH Settlement 23	Camp 4	7°32'24"N, 8°33'36"W	507	Informal settlement	1	12	8.3
15.XII.2012	SH Gangra	Adit 3	7°32'59"N, 8°37'48"W	720	Disturbed forest	1	–	
7.I.2012	SH Bonlah 2	Bonlah, forest	7°34'12"N, 8°39'0"W	452	Disturbed forest	3	24	12.5
07.I.2012	SH Bonlah 1	Bonlah, field	7°34'12"N, 8°39'36"W	438	Rice field	9	24	37.5
8-10.I.2012	SH Bentor 1	Bentor, campsite	7°31'11"N, 8°41'59"W	420	High forest	11	144	7.6
8-10.I.2012	PF Bentor 1	Bentor, camp site	7°31'11"N, 8°41'59"W	420	High forest	0	60	
Total	19					108	986	

were fixed in 4% formalin for later preparation as skin and skull specimens. In the Muséum national d'Histoire naturelle at Paris (MNHN), the skulls were prepared by the preparation service of Osteology and Taxidermy (SPOT) or directly in the field by Fodé Kourouma. All Guinean specimens and Liberian specimens from 2008-2010 (skulls and skins) and 2013 (skulls only) fieldworks were catalogued and deposited in the Museum collections of the MNHN (Appendices 1; 2). Except when stated, taxonomy follows Wilson *et al.* (2016, 2017) or more recent revisions for some genera. The Liberian specimens collected during the 2011-2012 survey were deposited in the Durban Natural Science Museum in South Africa (DM; Appendix 2).

To assist identifications, we used both qualitative and quantitative morpho-anatomical comparisons, especially on skulls, and different genetic analysis. Our new specimens were compared to existing vouchers collected during previous works (Heim de Balsac 1958; Heim de Balsac & Lamotte 1958; Coe 1975; Gautun *et al.* 1986) that are housed in the MNHN Paris and the Natural History Museum, London NHM, ex BMNH. We also examined type specimens where necessary (Appendix 3). We also compared our specimens with the Kenya National Museum, Nairobi (NMK) collection of Nimba rodents.

To assist with identifications, we detail the morphological and karyological characteristics of each species collected by us or by Lamotte (MNHN), Coe (NHM) and Forbes-Watson (NMK) either on the Guinean or the Liberian side of the mountain (Appendix 1). When available, we detail here standard external and cranio-dental measurements (defined in the section 'Taxonomic study', above) as well as genetic data. For released specimens and for some present in old collections at MNHN which had not been sequenced, we attempted to confirm identifications through morphometric analysis. Despite this, we were unable to confirm the species identity of some of these specimens, which we left as "indet". Some illustrations and camera trap pictures of Nimba rodents are provided in Appendices 5; 6; 7; 8.

Sixteen specimens were kept for standard karyotypic analyses, which were conducted directly in the field. Metaphase chromosome preparations were obtained by the standard colchicine method following the protocol of Lee & Elder (1980) and chromosomal formulae were directly analysed in the field (Appendix 4). For some specimens we performed BLAST identifications after sequencing of the cytochrome b mitochondrial gene. 90 specimens were sequenced by two of us (VN, AL). We also compared our specimens with genotyped ones in the MNHN previously obtained from West Africa, especially Côte d'Ivoire and Guinea. For *Dephomys* specimens, DNA was extracted from ethanol-preserved muscle, liver or heart using the NucleoSpin96 tissue kit (Machery-Nagel). The Cytb gene was amplified using PCR primers L7 and H15915 as described in Nicolas *et al.* (2008). The double-stranded PCR products were purified and sequenced at EUROFINS. Sequences are registered in Genbank. Sequence divergences were calculated using the K2P distance model, and a neighbour joining (NJ) tree of K2P distances was created with PAUP 4b10 (Swofford 2000). Bootstrap analyses (100 replicates) were used to estimate the robustness of internal node. Our phylogenetic trees were rooted with seven distantly related outgroups, all belonging to the Muridae Illiger, 1811.

Fig. 4. — Habitats on Liberian Nimba: **A**, camp 4 bush and secondary forest; **B**, camp 4 swamp; **C**, Yekepa border (edaphic savanna); **D**, Gbapa South (gallery forest, secondary forest); **E**, grassfield Transect; **F**, cultivated swamps Zolowee. Photos: C. Denys.

When the specimens were not genotyped, we refined identifications by doing standard morphometric skull distance analyses. Several series in the MNHN were available for most species, which allowed us to take into account intraspecific variability. The specimens were first sorted according to body measurements: head-body, tail, hind-foot and ear lengths. They were then identified based on a combination of diagnostic characters such as fur colour for both lower and upper parts of the body, skin colour of the tail, feet and ears.

Standard univariate statistics were calculated from external and skull measurements. Thirteen craniodental measurements were taken by using Mitutoyo callipers (0.1 mm precision).

Abbreviations

Institutions

DM	Durban Natural Science Museum, Durban;
IFAN	Institut français d'Afrique noire, Dakar;
MNHN	Muséum national d'Histoire naturelle, Paris;
MRAC	Muséum royal de l'Afrique centrale, Tervuren
NHM	National Museum History, London, formerly BMNH;
NMK	Natural Museum of Kenya, Nairobi.

Natural parks, reserves

ENNR	East Nimba Nature Reserve;
ESIA	Environmental and Social Impact Assessment;
IUCN	International Union for Conservation of Nature;
NP	National Park;
TMF	Tailings Management Facilities and Retention Dam.

Methods of collection and analyses

BLAST	basic local alignment search tool;
cytB	cytochrome b gene;
FN or aFN	fundamental number, autosome fundamental number;
NJ	neighbour joining;
P	pitfall traps line;
PCR	polymerase chain reaction;
RC	rodent captures;
S or SH	Sherman trap line;
TMWK	Tomahawk trap line;
TN	trap nights;
TS	trapping success;
2N	number of chromosomes.

Geography

a.s.l.	above sea level;
Mt, Mts	mount, mountains.

External measurements

E	ear length;
HB	head and body length;
HF	hindfoot length;
TL	tail length;
TL.HB	ratio Tail length/ Head and Body length;
TOTAL L	total length;
W	weight.

Skull measurements

CIO	interorbital constriction;
cv1 to 5	cingular supplementary cusps of the lower molars;
HMDB	height of the mandible;
M	upper molars;
m	lower molars;
LBT	length of the tympanic bulla;
LGT	greatest length of the skull;
LMDB	maximum length of the mandible;
LNAS	nasal length;
LPALFOR	length of the incisor foramen;
LPALPOST	length of the pterygoid fossae from the posterior part of the palate to the anterior border of foramen magnum;
LTR	lower tooth row length;
t1 to t9	main upper molars cusps;
tmA	antero-median cusp of the lower m1;
UTR	length of the upper molar row;
WNAS	nasal width;
WPAR	maximal width of the braincase;
WZYG	maximum zygomatic width.

Statistical analyses

CVA	canonical analysis;
MIN	minimum value;
MAX	maximum value;
PCA	principal component analysis;
SD	standard deviation.

We performed principal component analyses (PCA) and Canonical variates analyses (CVA) where necessary on craniodental and external measurements by using the XLSTAT 10.1 software (Addinsoft 2010).

ECOLOGICAL RESULTS

Trapping success

During this study, a total of 584 rodents were collected from the Guinean and Liberian sides of Mount Nimba. On both sides of the mountain, the same three genera (*Praomys* Thomas, 1915, *Mus* Linnaeus, 1758, *Lophuromys* Peters, 1874) constituted the bulk of the captured specimens. The highest trapping success of 11% was reached during Mission 2, the lowest was obtained during the wet season of Mission 1 (Table 4).

Mission 1 (Guinea, 2008-2010)

During Mission 1, we collected a total of 341 rodents of 15 genera during 9979 trap nights for an average trapping success of 3.6% in all types of traps and seasons (Table 1). In total, the most abundant rodent was *Praomys*, followed by *Mus* and *Lophuromys* (Table 1). The trapping success was lower during the wet than during the dry season one despite an increased trapping effort (Table 4). During the dry season *Mus* dominated the captures followed by *Praomys* and *Lophuromys*. In the wet season, *Lophuromys* became the most captured rodent followed by *Praomys* and *Mus*. Other rodents such as *Dendromus* Smith, 1829, *Malacomys* Milne-Edwards, 1877, *Hylomyscus* Thomas, 1926, were collected during both seasons. *Dephomys* Thomas, 1926, *Graphiurus* Smuts, 1832, *Typomys* Thomas, 1911 were recorded during the wet season while *Lemniscomys* Trouessart, 1881 and *Dasymys* Peters, 1875 were only trapped during the dry season. In houses, *Mastomys* Thomas, 1915 was the dominant genus.

Highest trap successes were obtained in the houses of the villages of Glabouyouma and Ziela (11.3 and 15.1%) (Table 1). Other sites with high trap success were cultivated swamp at Gbie (16.7%), gallery forest and ecotone with *Protea* forest in Gouan (at 1212-1236 m a.s.l. (10.8-11%), and in gallery forest along the Zié River (12%).

Mission 2 (Liberia, 2011-2012)

In Liberia, we collected a total of 108 rodent individuals belonging to 12 genera with an average trapping success of 11% (Tables 2, 4). The highest trap success was obtained in Bonlah 1 in a rice field (37.5%), followed by secondary forests in Tailings 1 (23.1%) and Tailings 7 (17.1%) (Table 2).

Table 3. — Summary of the habitat characteristics of the sampling sites in the ESIA Nimba Iron Ore Liberia Mission 3 (2013) where Sherman, pitfall and Tomahawk live traps were placed for the capture of rodents, listed in chronological order. **SHA** to **SHS**, Sherman traplines; **PF 1 to 3**, pitfall traplines; **TMWK 1 to 5**, Tomahawk traplines; **RC**, Rodent captures; **TN**, trapping effort measured as trap nights; **TS**, trapping success measured as the number of captured rodents.

Dates	Transects	Locality	Coordinates	Elevation (m)	Habitat	RC	TN	TS
18.III-20.III	SHA & A'	Camp 4	6°49'48"N, 8°39'36"W	515	Burnt gallery forest	4	60	6.7
19.III-04.IV	PF1	Camp4	6°49'48"N, 8°39'36"W	516	Burnt gallery forest	2	340	0.5
19.III-19.III	SHB	Camp4	6°49'48"N, 8°39'36"W	517	Burnt savanna, bush & forest edge	2	29	6.9
20.III-21.III	SHC	Camp4	6°49'48"N, 8°39'36"W	505	Burnt gallery forest	1	30	3.3
22.III-02.IV	SHD	Zolowee	6°47'24"N, 8°22'48"W	458	Village Houses	10	390	2.6
21.III-23.III	SHE	Camp4	6°49'48"N, 8°39'36"W	498	Bush and fallow	24	59	40.7
27.III-04.IV	PF2	Liabala	6°52'47"N, 8°34'48"W	478	Gallery forest	1	180	0.6
31.III-04.IV	PF3	Gbapa North	6°49'48"N, 8°29'24"W	441	Secondary forest	0	100	0
23.III-27.III	SHF&F'	Grassfield	7°1'48"N, 8°39'0"W	476	Burnt savanna & forest edge	13	700	1.9
23.III-27.III	SHG&G'	Grassfield	7°1'48"N, 8°39'0"W	456	Gallery forest	3	500	0.6
25.III-27.III	SH H	Grassfield Hill	7°1'48"N, 8°39'0"W	518	High forest	0	300	0
28.III-29.III	SHI	Railway	6°49'48"N, 8°39'36"W	478	Gallery forest East Railway	5	120	4.2
28.III-29.III	SHJ	Railway	6°49'48"N, 8°39'36"W	508	Gallery forest West railway	8	120	6.7
29.III-29.III	SHK	Railway	6°49'48"N, 8°39'36"W	486	Gallery forest East railway	3	67	4.5
29.III-29.III	SHL	Railway	6°49'48"N, 8°39'36"W	487	Gallery forest West railway, Hevea plantation	7	67	10.5
30.III-01.IV	SHM	Gbapa South	6°49'48"N, 8°29'24"W	474	Gallery forest	11	360	3.1
31.III-01.IV	SHN	Gbapan North	6°49'48"N, 8°29'24"W	460	Gallery forest	12	360	3.3
02.IV-04.IV	SHO	Camp4	6°49'48"N, 8°39'36"W	498	Secondary forest & swamp	6	225	2.7
02.IV-04.IV	SHP	Camp4	6°49'48"N, 8°39'36"W	491	Fern swamp & enclosed savanna	5	225	2.7
03.IV-04.IV	SHQ	Border Hill	6°55'11"N, 8°50'23"W	569	Secondary forest	10	100	10
03.04-04.IV	SHR	Border	6°55'11"N, 8°50'23"W	542	Enclosed savanna	6	100	6
03.IV-03.IV	SHS	Zolowee Hevea	6°47'24"N, 8°22'48"W	473	Hevea plantation with secondary forest	2	50	4
28.III-29.III	TMWK 1	Grassfield	7°1'48"N, 8°39'0"W	427	Gallery forest	0	20	0
25.III-27.III	TMWK 2	Grassfield	7°1'48"N, 8°39'0"W	482	Burnt savanna & forest edge	0	30	0
25.III-27.III	TMWK 3	Railway	6°49'48"N, 8°39'36"W	496	Gallery forest west railway	1	57	0
30.III-01.IV	TMWK 4	Gbapa North	6°49'48"N, 8°29'24"W	467	Gallery forest west railway	0	30	0
30.III-01.IV	TMWK 5	Gbapa North	6°49'48"N, 8°29'24"W	470	Gallery forest	0	27	0
Total	60					135	4646	

Mission 3 (Liberia, 2013)

In 2013, in Liberia, we collected a total of 135 rodents belonging to 12 genera over 4646 trap nights (2.91% trap success) during dry season (Tables 3; 4). *Mus* and *Lophuromys* were the most abundant genera followed by *Praomys* (Table 5). Other taxa were represented by fewer captures: *Malacomys* (17 specimens), *Hylomyscus* (8), *Lemniscomys* (2), *Grammomys* Thomas, 1915 (3), *Rattus* Fischer, 1803 (2), *Typomys* (1) *Gerbilliscus* Thomas, 1897 (1) and *Cricetomys* Waterhouse, 1840 (1) (Table 5). The highest trap success was found in Camp4 bush and fallow land (40.7%) then in a gallery forest and *Hevea* (rubber) plantation west of the railway (10.5%) and the secondary forest at the Border locality (10%) (Table 3).

Mission 4 (Liberia, 2017)

In 2017, the camera traps placed in a lowland forest recorded five species of rodents, which included three squirrels (*Funisciurus pyrrhopus* F.Cuvier, 1833, *Paraxerus poensis* A.Smith, 1830, and *Protoxerus stangeri* Waterhouse, 1842), as well as *Atherurus africanus* Gray, 1842 and *Cricetomys gambianus* Waterhouse, 1840.

Table 4. — Summary of number of Rodent captures (**RC**), trapping effort (**TN**) and trapping success (**TS**) during the missions 1-3 to Mount Nimba (Mission 4 not relevant here).

	Country	Season	RC	TN	TS
Mission 1	Guinea	Dry	162	3750	4.3
	Guinea	Wet	179	6229	2.87
Mission 2	Liberia	Dry	108	986	11
Mission 3	Liberia	Early wet	135	4646	2.91

Rodent Diversity

During missions 1 to 4, we collected a total of 22 species from both sides of the mountain (Table 5) and also observed various larger rodents such as four squirrels of the family Sciuridae. This represented a greater diversity than that reported by Gautun *et al.* (1986) or Coe (1975).

In total in Mission 1 on the Guinean side, the highest number of captured individuals was for *Praomys*, followed by *Mus* and *Lophuromys* (Table 1). During Mission 2, the most abundant genus (found in all localities and across all habitats) was *Praomys* followed by *Hylomyscus* and *Lophuromys* (Tables 2, 5). *Malacomys* was also well represented. In Mis-

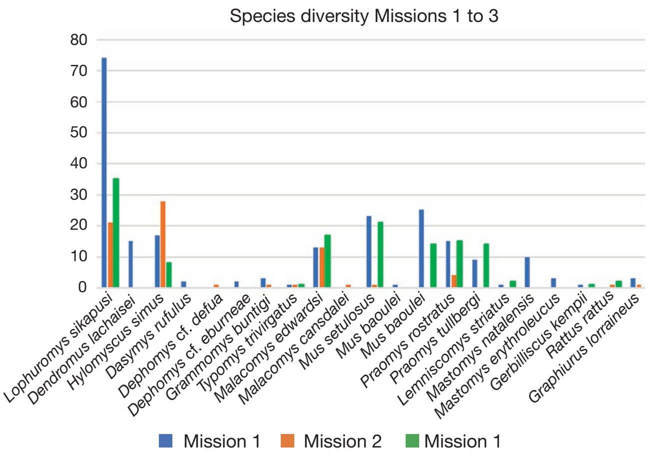

Fig. 5. — Number of specimens of each species captured during Missions 1 to 3 (only genotyped specimens included).

sion 3, *Mus* and *Lophuromys* were the most abundant genera followed by *Praomys* (Table 5). Other genera were represented by fewer captures: *Malacomys*, *Hylomyscus*, *Dendromus*, *Lemniscomys*, *Grammomys*, *Dasymys*, *Rattus*, *Typomys*, *Gerbilliscus* and *Cricetomys* (Table 5).

At species level *L. sikapusi* Temminck, 1853 was dominant followed by *H. simus* Allen & Coolidge, 1930, *P. rostratus* Miller, 1900 and *M. minutoides* Smith, 1834, *M. setulosus* Peters, 1876 and *M. edwardsi* Rochebrune, 1885. *D. lachaisei*, *Mus baoulei* Vermeiren & Verheyen, 1880, *M. erythroleucus* Temminck, 1853, *D.* cf. *eburneae* Heim de Balsac & Bellier, 1967 and *D. rufulus* Miller, 1900 were recorded only during Mission 1. *M. cansdalei* Ansell, 1958 as well as *D.* cf. *defua* Miller, 1900 were collected only during Mission 2 (Fig. 5).

The older collections detailed a relatively high diversity of sciurids with eight species. Two Hystricidae (*Atherurus* F. Cuvier, 1829 and *Hystrix* Linnaeus, 1758) were observed as well as three species of Anomaluridae. To this we can add two species of *Cricetomys* (*C.* cf. *emini* Wroughton, 1910 and *C. gambianus* Waterhouse, 1840) and two species of the family Gliridae Muirhead, 1819 (*Graphiurus crassicaudatus* Jentink, 1888 and *G. natglasii* Jentink, 1888; Table 5). Camera trap pictures also confirmed the presence of *Protoxerus stangeri*, *Paraxerus poensis* and *Funisciurus pyrrhopus*.

Habitat preferences

Some savanna-associated rodents were captured in relatively low numbers such as *Gerbilliscus kempii*, *Dasymys rufulus*, *Lemniscomys striatus*, *Mastomys erythroleucus*, and *Thryonomys swinderianus* Temminck, 1827. Others like *Grammomys macmillani* Wroughton, 1907 and *Graphiurus lorraineus* Dollman, 1910 were found at the ecotone savanna-forest. Most of the dominant rodent collected belong to forest species like *Praomys tullbergi* Thomas, 1894 and *P. rostratus*, *Malacomys edwardsi* and *M. cansdalei*, *Hylomyscus simus* (Table 5) *Typomys trivirgatus* Temminck, 1853 and *Dephomys* spp. are also forest inhabitants but were found in low numbers of individuals (Table 6). *Lophuromys sikapusi* was one of the dominant species during our traping, but it was associated with swamps and thickets both in secondary forests and savannas (Table 6). *Dendromus lachaisei* was found in savanna and in forest. All *Mus* species are ubiquitous and found in all types of environments (Table 6). *M. natalensis* was found into houses and *R. rattus* in houses and cultivated fields (Table 6).

TAXONOMY AND IDENTIFICATIONS

Family Muridae Illiger, 1811
Subfamily Gerbillinae Gray, 1825
Genus *Gerbilliscus* Thomas, 1897

Gerbilliscus kempii (Wroughton, 1906)

Tatera kempii Wroughton, 1906: 375.

Remarks

Four species of *Gerbilliscus* occur in West Africa (Granjon *et al.* 2012) and are easily distinguished by chromosomal and molecular data but not by external characters. *G. kempii* Wroughton, 1906 is characterized by a karyotype of 2N = 46, NFa = 64 (Colangelo *et al.* 2005, Volobouev *et al.* 2007), *G. guineae* Thomas, 1910 by 2N = 50, FN = 64; *G. gambianus* by 2N = 52, NF = 64 (Granjon 2005, Volobouev *et al.* 2007) and *Gerbilliscus giffardi* Wroughton, 1906 by 2N = 48, FN = 64 (Volobouev *et al.* 2007). Twelve specimens of *Gerbilliscus* were collected by Heim de Balsac & Lamotte (1958; but attributed to *G. kempii*) and Gautun *et al.* (1986; as *G. hopkinsoni* synonymized under *kempii*) but none on the Liberian side of the Mount according to Coe (1975). According to Gautun *et al.* (1986), the Nimba specimens they collected at 1600 m a.s.l. were displaying a 2N = 46 karyotype. After a molecular and morphometric analysis of West African *Gerbilliscus*, Granjon *et al.* (2012) suggested that the *Gerbilliscus* sp. specimens with 2N = 46 may correspond to *G. kempii* and those previously called *G. kempii* in the literature may refer to *G. giffardi*. However, the authors also stressed that a revision of all West African *Gerbilliscus* taxa was needed before this assertion could be tested. Therefore, to avoid confusion, we will not use the taxonomy proposed by Granjon *et al.* (2012) in subsequent paragraphs. Based on our new Liberian specimen, plus Nimba old collection specimens and the karyotyped or sequenced ones, we performed a Canonical Variate Analysis on 10 cranial dimensions and 18 genotyped specimens plus the holotypes of *G. guineae*, *G. kempii*, *G. gambiana* and *G. hopkinsoni* (Fig. 6). The analysis allowed for an unambiguous attribution of the Nimba specimens to *G. kempii*. Hence, we confirmed that all the Nimba specimens belong to *G. kempii* and the holotype of *G. hopkinsoni* fitted well with *G. kempii* with a correct classification percentage of 95.45%.

Heim de Balsac & Lamotte (1958) reported the presence of *G. kempii* in Ziéla (2 indiv.). According to these authors, this gerbil is large, the tail has no terminal pencil

Table 5. — A summary of the number of rodent captures by species reported by different published inventories and as unpublished records in the collections of MNHN and NMK. For Coe (1975), Misonne & Verschuren (1976) (**M&V 1976**), Heim de Balsac & Lamotte (1958) (**HB&L 1958**) and Gautun *et al.* (1986) (**G *et al.* 1986**) we used the updated taxa names after verifications provided in the Taxonomy section. Abbreviations: **Obs.**, species observed in the field but not collected; **×**, collected in unknown frequency; **?**, probable presence.

	Missions								
Taxa	**1**	**2**	**3**	**4**	**HB&L 1958**	**G *et al.* 1986**	**Coe 1975**	**M&V 1976**	**NMK**
Nesomyidae	–	–	–	–	–	–	–	–	–
Cricetomys cf. *emini*	–	–	–	–	–	1	–	3	×
Cricetomys gambianus	–	–	1	×	Obs.	–	7	–	–
Dendromus lachaisei	15	–	–	–	10	–	4	1	–
Muridae	–	–	–	–	–	–	–	–	–
Uranomys ruddi	–	–	–	–	2	–	–	–	–
Lophuromys sikapusi	74	21	35	–	17	32	21	146	×
Hylomyscus simus	17	28	8	–	25	3	4	14	–
Dephomys cf. *defua*	–	1	–	–	–	4	–	–	–
Dephomys cf. *eburneae*	2	–	–	–	–	–	–	–	–
Dephomys sp. indet.	–	–	–	–	4	–	31	21	–
Oenomys ornatus	–	–	–	–	5	–	–	4	–
Grammomys macmillani	3	–	1	–	17	–	–	–	–
Typomys planifrons	–	–	–	–	3	2	6	13	×
Typomys trivirgatus	1	1	1	–	–	–	7	?	–
Mylomys dybowskii	–	–	–	–	–	1	–	–	–
Malacomys edwardsi	13	13	17	–	9	13	13	18	–
Malacomys cansdalei	–	1	–	–	–	–	–	–	–
Malacomys sp. indet.	–	–	–	–	–	1	–	–	–
Mus setulosus	23	1	21	–	12	–	7	–	–
Mus baoulei	1	–	–	–	–	–	–	–	–
Mus minutoides	25	–	14	–	16	–	7	7	–
Mus sp. *indet.*	24	–	–	–	–	–	–	–	–
Praomys rostratus	15	4	15	–	7	×	?	?	–
Praomys tullbergi	9	–	14	–	4	30	94	106	×
Praomys sp. indet.	55	33	3	–	–	–	–	–	–
Lemniscomys striatus/macculus bellieri	1	–	2	–	20	3	7	5	×
Mastomys natalensis	10	–	–	–	Obs.	–	–	?	–
Mastomys erythroleucus	3	–	–	–	–	2	–	18	–
Mastomys sp. indet.	54	–	–	–	–	–	–	–	–
Arvicanthis cf. *rufinus*	–	–	–	–	1	–	–	–	–
Dasymys rufulus	2	–	–	–	16	–	9	16	–
Gerbilliscus kempii	Obs.	–	1	–	2	10	–	–	–
Rattus rattus	–	1	2	–	4	Obs.	13	15	×
Gliridae	–	–	–	–	–	–	–	–	–
Graphiurus crassicaudatus	–	–	–	–	1	–	–	–	×
Graphiurus lorraineus	3	1	–	–	20	–	4	5	×
Graphiurus nagtglasii	–	–	–	–	2	–	5	5	×
Anomaluridae	–	–	–	–	–	–	–	–	–
Anomalurus beecrofti	–	–	–	–	×	–	1	1	×
Anomalurus derbianus	–	–	–	–	×	–	1	1	×
Idiurus macrotis	–	–	–	–	–	–	Obs.	–	9
Thryonomyidae	–	–	–	–	–	–	–	–	–
Thryonomys swinderianus	*2*	–	–	–	2	Obs.	–	Obs.	x
Hystricidae	–	–	–	–	–	–	–	–	–
Atherurus africanus	–	Obs.	–	×	–	–	Obs.	Obs.	x
Hystrix cristata	–	–	–	–	–	–	–	Obs.	–
Sciuridae	–	–	–	–	–	–	–	–	–
Epixerus ebii	–	–	–	–	–	–	1	–	×
Funisciurus pyrrhopus	–	–	–	×	×	–	2	–	×
Heliosciurus gambianus punctatus	–	–	–	–	x	–	3	1	–
Heliosciurus rufobrachium	–	Obs.	–	–	×	–	–	1	×
Paraxerus poensis	–	Obs.	–	×	x	–	4	2	×
Allosciurus aubinnii	–	–	–	–	–	–	1	–	×
Protoxerus stangeri	–	–	–	×	x	–	2	–	×
Euxerus erythropus	Obs.	Obs	–	–	x	–	Obs.	1	×
Species diversity	**18**	**11**	**13**	**5**	**29**	**13**	**27**	**24**	**21**

TABLE 6. — Diversity, number of rodent captures, and habitats of rodent species from Missions 1 to 3 on the Guinean and Liberian sides of Mount Nimba. The provided numbers of individuals concern only genetically typed specimens **Obs.** means field observations

	Missions					
Taxa	**1**	**2**	**3**	**Localities**	**Habitat**	**Elevation (m. a.s.l.)**
Gerbilliscus kempii	Obs.	0	1	Gouan, Serengbara	Edaphic savanna	550-1200
Typomys trivirgatus	1	1	1	Gouan, Hevea plantation, Tailings 1	Secondary, lowland forest and Parinari mountain forest	381-1200
Dephomys cf. *eburnea*	1	–	–	Serengbara	Secondary forest	500
Dasymys rufulus	2	–	–	Pierré Richaud, Mare d'hivernage	Ecotone mountain frest-altitude savanna, altitude savanna	1616-1639
Dephomys cf. *defua*	–	1	–	Iti 4	Grassland.forest mosaic	491
Grammomys macmillani buntingi	–	–	3	Camp 4, Border, Ziela	Degraded gallery forest, swamp with ferns, edaphic savanna	500-542
Lemniscomys striatus	1	–	2	Grassfield, Gbie	Edaphic savanna	550-561
Malacomys edwardsi	6	17	17	Tailings, 1&2&4, Bonlah2, Yiti 4, ENNR15, Gbapa, Hevea plantation, Serengbara, Gouan, New Camp, Yekepa, Ziela	Primary,secondary, gallery, mountain forest,	381-550-1064-1300
Malacomys cansdalei	–	1	–	Ziela, Bentor 1	Primary forest	420-500
Praomys rostratus	21	4	16	Gouela, ZielaGouan, Serengbara, Zie spring, Zolowee, Grassfield, Gbapa, hevea plantation, Camp 4, tailings1, ENNR16, Yiti4, Gbapa	Primary, secondary, gallery forest	500-1200
Praomys tullbergi	9	0	14	Seringbara, Zie, Gblayougoma village, Gbie and in the Liberian side in the hevea plantation, Border site, Camp4	Primary & secondary forest	500-600
Praomys sp.	–	32	–	1, 4,7, Bentor 1, ENNR16	Primary & secondary forest	500-690
Hylomyscus simus	17	28	8	Ziéla, Grassfield, West Nimba, New Camp, Gouan, Gbié, Serengbara, Tailings 2, 4, 7, Bonlah 2, Bentor 1, Grassfield, Gbapa, ENNR11, 16	Primary, secondary, mountane forest	500-1350
Mastomys erythroleucus	3	–	–	Gbie, mare d'hivernage	Edaphic savanna	620-1300- 1600
Mastomys natalensis	17	–	–	Gouan Cité II, Gbie, Ziela	Houses	500-608
Mastomys sp.	39	–	–	Serengbara, Zouguepo, Glabouyouma, Gbapa, Yekepa	Cassava, rice farms, secondary forest, cultivated fields, secondary bushes, savannas, abandoned villages	500+
Mus minutoides	13	–	14	Serengbara, Gbie, Gouan, Grassfield, Camp4, Border	Swamp, gallery forest, ecotone burnt Protea savanna	500-600
Mus setulosus	10	1	20	Serengbara, Gblayougouma, Gbie, Mare d'hivernage, Camp 4 swamp, Grassfield, Liabala, Hevea Plantation, Gbapa, Border, Bentor 1, Ziéla	Edaphic savanna, secondary forest, ecotone savanna-montane forest	400-500- 1250-1300-1640
Mus baoulei	1	–	–	Gouan	Mountain gallery forest	1212
Rattus rattus	–	1	2	New Camp, Grassfield, Yekepa, Camp 4	Forest, banana farm, Houses, human settlements	<600
Lophuromys sikapusi	42	2	31	Gbie, Serenbgara, Gouan, Camp4, Gbapa, Zolowee, Grassfield, Tailings 1, Tailings 4, New Camp, East and West Nimba, Grassfield, Yekepa, Gbapa, Mare d'hivernage	Swamps, bush along degraded gallery forest, secondary forest,	500-1620
Cricetomys gambianus	–	2	1	Zouguepo plateau, TMF	Forest, secondary forest	400-500
Dendromus lachaisei	15	–	–	Mare d'Hivernage, Serengbara, Gbie	Edaphic savanna, secondary forest	500-1640
Graphiurus lorraineus	3	1	–	Mare d'hivernage, Mount Gangra, Nzo, Ziéla, Veblo, Nion, Yalé, New Camp, Grassfield	Loudetia savanna, Banana Plantation,	500 561
Thryonomys swinderianus	2	–	–	Mare d'hivernage	Moist savanna	1640
Paraxerus poensis	–	Obs.	–	West Nimba and East Nimba Nature Reserve	Bush, forest	500 1000-1300
Heliosciurus rufobrachium	–	Obs.	–	Bonlah, New Camp	–	500
Euxerus erythropus	Obs.	Obs.	–	Gouan, Ziela, Yekepa, Grassfield, TMF, ENNR, Yekepa, Camp 4	Ecotone of gallery forest. Protea Savannah, cultivated areas, grasslands	500 1200

and is brown. It was also collected in pellets of the Western Barn Owl (*Tyto alba* (Scopoli, 1769)) in Gouécké. During Mission 1, no new specimens were collected but one dead animal was photographed in Serengbara (Appendix 5). In Mission 3 we collected a dead *Gerbilliscus* individual at the border with Guinea in edaphic savanna. This specimen was not barcoded. The hind foot length was similar to that of the *G. kempii* holotype, and close to the *G. kempii* specimen that we identified genetically. The recently collected Liberian specimen (2014-980) was similar in its body proportions to the older Nimba specimens collected by Lamotte (Table 7). The specimen collected by Lamotte (MNHN-ZM-MO-1997-1563) displays a typical light brown dorsal pelage above and white below. The tail is brown above and white below and does not end in a terminal tuft of hair. The tail is slightly shorter than the HB length.

Genus *Taterillus* Thomas, 1910

Taterillus gracilis (Thomas, 1892)

Gerbillus gracilis Thomas, 1892: 76.

REMARKS

Another gerbil, *Taterillus gracilis* (Thomas, 1922) was found by Heim de Balsac & Lamotte (1958) in pellets of the owl *Tyto alba* at Gouécké on the Guinean side of Mount Nimba. It was not reported by Coe (1975), Misonne & Verschuren (1976) or Gautun *et al.* (1986), from the Liberian side. The species is widely distributed in West African savannas (Monadjem *et al.* 2015). We did not record the species in any of our surveys and were unable to localize the specimens collected by Heim de Balsac & Lamotte (1958) in MNHN. Hence, we consider the presence of this species on Mount Nimba doubtful.

Subfamily MURINAE Illiger, 1811

REMARKS

Representatives of various Murinae tribes were found both in our new samples and in old MNHN collections. External and skull measurements are provided in Tables 7; 8.

Genus *Arvicanthis* Lesson, 1842
(Tables 7; 8)

REMARKS

In West Africa, grass rats of the genus *Arvicanthis* are represented by four clades, namely: *A. ansorgei* Thomas, 1910; *A. niloticus* (Desmarest, 1822) C2 & C4 clades and *A. rufinus* (Temminck, 1853) (Bryja *et al.* 2019). These four species are not easy to distinguish morphologically, although some can be characterized by their karyotypes. *Arvicanthis ansorgei* is defined by 2N = 62, FN = 74-76 and this cytotype was recorded in Benin and S. Mali. *A. niloticus* is also characterized by 2N = 62 but a FN = 64 and is found from Senegal to Burkina Faso (Ducroz *et al.* 1997). In Côte d'Ivoire (RCI) Tranier & Gautun (pers. comm.)

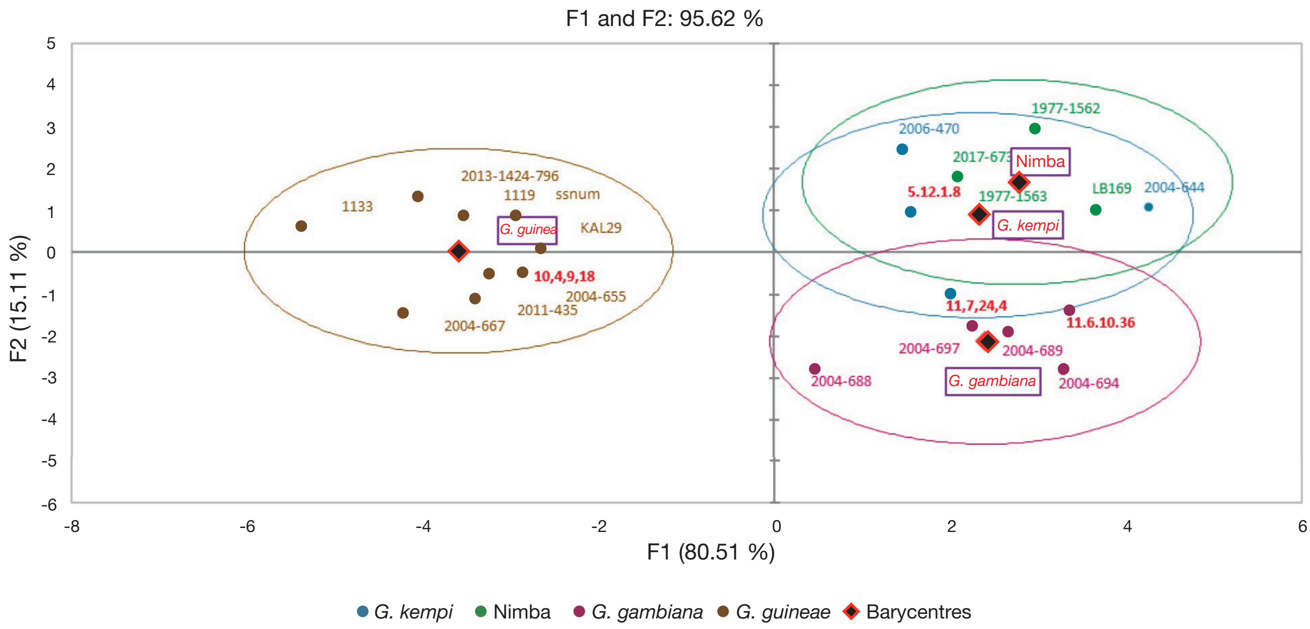

FIG. 6. — Canonical analysis on 8 skull distances for 18 genotyped specimens of *Gerbilliscus* spp. plus two specimens from old Nimba MNHN collections and new one (this surveys), plus the holotypes of *G.guineae* Thomas, 1910 (BMNH-10.4.9.18), *G. hopkinsoni* Thomas, 1911 (BMNH-11.7.24.4) *G. kempii* Wroughton, 1906 (BMNH-5.12.1.8) and *G. gambianus* Thomas, 1910 (BMNH-11.6.10.36) in red bold characters (see Appendices 1, 2, 3 for MNHN specimens).

Table 7. — External standard measurements of the Guinean and Liberian Nimba Muridae specimens from new (Missions 1 & 3) and old (Lamotte) MNHN-ZM collections, new Mission 2 DM collections or after Coe (1975) NHM collections. Many old collection specimens do not have external measurements on voucher's labels or were still in alcohol and could not be added here: * measurements taken on specimens in alcohol. **N**, number of individual measurements; **Mean**, average value; **Min**-**Max**, minimum and maximum value: **W**, weight; **HB**, head and body length; **TL**, tail length; **HF**, hindfeet; **E**, ear length; **TL.HB**, ratio tail length/head and body length.

Taxa	Catalogue Number	N	W	HB	TL	HF	E	TL.HB
G. kempii	MNHN-ZM-2014- 980	1	140	163	180	35	23	110.4
G. kempii	MNHN-ZM-MO-1997-1562	1	115	162	173	35+3	–	107
G. kempii	MNHN-ZM-MO-1997-1563	1	110	160	167	35+	–	104
Arvicanthis sp.	MNHN-ZM-MO-1955-660	1	107	–	30	16	–	–
T. trivirgatus	MNHN-ZM-2021-1695	1	45	126	98	33	16	–
T. trivirgatus	MNHN-ZM-2014-1027	1	42	123	–	28	17	–
T. trivirgatus	DM13168	1	42	124	90	30	17	–
T. trivirgatus	NHM mean	6	54.2	116	97.5	28.8	16.3	–
	Min-Max		48-69	103-126	80-111	27-31	15-17	–
D. rufulus	MNHN-ZM-2011-578	1	48	124	128	29+3	16	–
D. rufulus	MNHN-ZM-2021-1693	1	72	128	142	32	18	–
D. rufulus	MNHN-ZM-MO-1991-2276	1	–	115	146	32	19	–
D. rufulus	MNHN-ZM-MO-1987-49	1	81	256*	–	31	20	–
D. rufulus	MNHN-ZM-MO-1987-50	1	81	293*	–	33	17	–
Dephomys cf. *eburneae*	MNHN-ZM-2021-1694	1	66	134	210	27	19	–
Dephomys sp.	MNHN-ZM-MO-1997-1502	1	45	123	191	27	–	–
Dephomys cf. *defua*	DM13172	1	–	–	–	23	–	–
Dephomys sp.	MNHN-ZM-MO-1991-2101	1	–	100	24	–	–	–
Dephomys sp.	MNHN-ZM-MO-1991-1561	1	–	100	170	20	12	–
Dephomys sp.	MNHN-ZM-MO-1991-2118	1	–	100	170	25	16	–
G. macmillani	MNHN-ZM-2015-1018	1	37	119	163	23	17	–
G. macmillani	MNHN-ZM-2014-1016	1	38	112	167	23	16	–
G. macmillani	MNHN-ZM-2014-1017	1	41	118	134	23	15	–
G. macmillani	MNHN-ZM-MO-1991-2114 to 2117 Mean	3	36	101.3	158.7	23.5	14.7	–
	Min-Max		35-37	90-118	130-185	21.5-25	14-16	–
L.striatus	MNHN-ZM-2021-1696	1	38	116	–	26	16	–
L. striatus	MNHN-ZM-2014-978, MNHN-ZM-2014-979	2	35-38	113-114	120-121	24	16	105-106
L. striatus	MNHN-ZM-MO-1991-2147 MNHN-ZM-MO-1991-1121	2	–	105	123-125	28	13-14	117-119
M. dybowskii	MNHN-ZM-MO-1998-1013*	1	–	67	67	20+2	11+	–
O. ornatus	MNHN-ZM-MO-1981-1120	1	–	137	188	34	18	–
M. edwardsi	DM13170	1	62	138	167	32.6	27	–
M. edwardsi	DM13191	1	46	128	155	31	26	–
M. edwardsi	DM13192	1	52	126	168	33	24	–
M. edwardsi	MNHN Mission 1 Mean	7	45.4	121	141.4	32.6	24.7	–
	Min-Max		21-79	93-152.5	107-174	31-35	20-29	–
M. edwardsi	DM Mission 2 Mean	17	61	139	164.1	31.9	26.1	–
	Min-Max		44-84	128-155	147-182	21-35	23-28	–
M. edwardsi	MNHN Lamotte Mean	15	60	139	170.6	34.9	26.3	–
	Min-Max		27.5-82	103-156	130-193	32-37	24-28	–
M. cansdalei	DM 13173	1	86	152	216	42.7	28,0	–
M. cansdalei	MNHN-ZM-MO-1998-2058, MNHN-ZM-MO-1998-2059	2	107-112	168-171	208-222	44-47	32	–
M. cansdalei	NHM-44.460 Type	1	–	135	200	40	29	–
M. cansdalei	NHM-46.459 paratype	1	–	141	189	39.5	30	–
P. rostratus	MNHN Mission1 Mean	21	43.8	119.4	132.2	24.5	18	–
	Min-Max		12-73	76-139	86-162	20-28	15-19	–
P. tullbergi	MNHN Mission 1 Mean	22	29.7	102.7	125.1	21.3	16.8	–
	Min-Max		8-45	74-120	78-143	16-24	14-18	–
H. simus	MNHN Mission 1 mean	17	13.7	76.2	97	17.4	14.8	–
	Min- Max		4-27	52-114	66-127	15-19	10-18	–
H. simus	DM Mission 2 Mean	3	21.8	92.7	123.7	17.4	17	–
	Min-Max		21-22.5	90-94	117-130	17.1-17.6	16-18	–
H. simus	MNHN Mission 3 Mean	8	16.5	84.8	118	18.4	15.1	–
	Min-Max		8-24	68-94	98-139	16-19	12-17	–
H. simus	MNHN Lamotte Mean	10	18.2	81.7	119.5	18.7	14.6	–
	Min-Max		11-27	65-97	105-137	18-20	13-17	–
H. simus	NHM Min-Max	3	11-56	70-124	114-144	17-18	12-16	–
M. erythroleucus	MNHN-ZM-2021-1770	1	43	119	112	24	17	–
M. erythroleucus	MNHN-ZM-2021-1771	1	–	95	95	23+1	–	–
M. erythroleucus	MNHN-ZM-2021-1772	1	43	119	112	24	17	–
M. natalensis	MNHN-ZM-2021-1776	1	32	111	108	24	16	–
M. natalensis	MNHN-ZM-2021-1773	1	43	114	106	24+1	17	–
M. natalensis	MNHN-ZM-2021-1774	1	34	106	109	24	16	–
M. natalensis	MNHN-ZM-2021-1775	1	19	88	78	23	17	–

Table 1. — Continuation.

Taxa	Catalogue Number	N	W	HB	TL	HF	E	TL.HB
M. minutoides	MNHN Mission 1 Mean	14	5.32	57.67	45.71	12.33	8.5	–
	Min-Max		4-7	51-64	37-51	11-13	7-10	–
M. minutoides	MNHN Mission 3 Mean	14	6.42	64.5	48	12	9.57	–
	Min-Max		6-7.3	60-68	42-54	8-13	9-10	–
M. setulosus	MNHN Mission 1 Mean	10	9.15	74.7	53.7	13.65	10.8	–
	Min-Max		6-13	61-114	49-57	13-14.5	10-12	–
M. setulosus	DM Mission 2 mean	19	11.05	78.3	48.39	13.21	10.11	–
	Min-Max		8-17	68-118	41-56	13-14	9-11	–
M. baoulei	MNHN-ZM-2011-570	1	6	59	39	12	10	–
R. rattus	MNHN-ZM-MO-1992-206	1	228	177	205	37	17	–
R. rattus	MNHN-ZM-2014-976	1	49	132	156	32	20	–
R. rattus	MNHN-LB15	1	49	132	156	32	20	–
R. rattus	MNHN-ZM-2014-977	1	25	104	116	29	19	–
R. rattus	MNHN-LB22	1	25	104	116	29	19	–
R. rattus	DM13205	1	68	132	173	31	–	–
U. ruddi	MNHN-ZM-MO-1981-1123	1	–	95	–	19	13	–
L. sikapusi	MNHN Mission 1 Mean	68	53.6	122.7	64.6	22.4	16.1	–
	Min-Max		25-85	38-142	51-74	12-23	13-18	–
L. sikapusi	MNHN Mission 3 Mean	30	57.6	125.7	63.8	21.3	15.7	–
	Min-Max		19-80	73-148	50-74	12-24	10-18	–
L. sikapusi	DM Mission 2	2	55-59	126-128	72-67	22.3-22	15-16	–

reported a specimen with 2N = 62. A cytotype of 2N = 62, FN = 76 from West of the Niger River was attributed to *A. rufinus* (Volobouev *et al.* 2002). We did not collect any new specimens of this genus, so we can only rely on morphological characters to describe the two previously collected specimens. Thus, species identification remains doubtful.

A single specimen (MNHN-ZM-2006-10), preserved in alcohol, was collected in Grassfield (Liberia) by Xavier Françoise, who attributed it to *A. ansorgei* because it had a very rufous pelage. However, it was a juvenile individual and no external measurements were reported.

The other MNHN specimen (MNHN-ZM-AC-1955-660) was collected by Matthey. It displays an *Arvicanthis* morphology but looks small and is relatively young (Table 7). This specimen displays the dorsal speckled pelage with brown-rufous hairs mixed with grey-black ones. The tail is incomplete. The HF is small compared with the description of *A. rufinus* in Rosevear (1969), and fits better with *A. ansorgei*. There is a rufous area at the base of the tail and the ventral pelage is white-grey with pale orange. The tail is bicolored black above and reddish-yellow below. The skull of this specimen is robust, the nasal bones are short and the IOC large and framed by two marked fronto-parietal crests. In ventral view the infraorbital foramen is long entering the palate between the molar rows reaching the first lobe of cusps of the upper M1. The molar row is long, as is the length of the tympanic bullae. This specimen corresponds to a young individual and is slightly smaller than the NHM type series of *A. rufinus* but fits within *A. rufinus* from Benin and *A. ansorgei* for LGT measurement. Its upper molar row length fits with *A. ansorgei* karyotyped specimens rather than with *A. rufinus* (Table 8).

Genus *Typomys* Thomas, 1911
(Tables 7; 8)

Remarks

Recent molecular phylogenies suggested to rehabilitate the genus *Typomys* for two species which were assigned previously to genus *Hybomys* (Missoup *et al.* 2018, Pradhan *et al.* 2021). This work followed the suggestions of Carleton & Robbins (1985). West Africa has two recognized species of *Typomys: T. planifrons* Miller, 1900 and *T. trivirgatus* Temminck, 1853. The main difference between these species is the number of dorsal stripes of the pelage: one in *T. planifrons* and three in T. *trivirgatus*. Roche (1971) recorded specimens in Seredou (170 km west from Nimba) with one and three stripes that he attributed to *T. trivirgatus*. Heim de Balsac & Lamotte (1958) signalized the presence of a single-striped *Typomys* which they named *T. univittatus planifrons.* They did not recorded *T. trivirgatus* on Mount Nimba, but only in Boola (Guinea, 100 km North of Mount Nimba), where it coexists with *T. planifrons* (Heim de Balsac & Lamotte 1958). In Ziama, Mamba *et al.* (2021) recovered one specimen of *T. trivirgatus* in the Wologizi Liberian side of the Mount. It was also recovered by Coe (1975) on the Liberian side of Mount Nimba (Iti valley) between 850 m and 1350 m and was associated with montane forest. According to Gautun *et al.* (1986) only *T. planifrons* was found by them on Mount Nimba. According to Carleton & Robbins (1985), both species coexist West of the Sassandra River and Misonne & Verschuren (1976) indicated they are present on the Liberian side of Mount Nimba. Coe (1975) reported collecting both single-striped and three-striped mice, which he classified as *Typomys trivirgatus planifrons* and *Typomys trivirgatus trivirgatus*, respectively.

All the new specimens captured by us were molecularly identified as *T. trivirgatus*. However, we have inspected all the previously collected material and can thus confirm the presence of both species of *Typomys* from Mount Nimba

Typomys planifrons (Miller, 1900)

Arvicanthis planifrons Miller, 1900: 641.

Hybomys trivirgatus planifrons – Rosevear 1969: 381.

Hybomys planifrons – Carleton & Robbins 1985: 956.

Remarks

External characters: no standard external measurements exist for the old specimens of *T. planifrons* but they display the characteristic single-striped pattern of this species. These specimens display only one dorsal black line, and no clear demarcation between dorsal and ventral pelage (yellow-grey). They have a short tail with hairs and an ochraceous spot around the anal region and inner side of hind legs, as indicated by Miller (1900). The skull is robust with a large CIO and a round braincase. The infraorbital foramen enters between the molar rows until the t1 of the upper M1. The tympanic bullae are relatively small. Skull dimensions of the specimens attributed to *T. planifrons* from Mount Nimba agree well with those of the holotype. There were no size differences with *T. trivirgatus* in our small sample (Tables 7; 8).

Typomys trivirgatus (Temminck, 1853)

Mus trivirgatus Temminck, 1853: 377.

Hybomys trivirgatus trivirgatus – Rosevear 1969: 381.

Hybomys trivirgatus – Carleton & Robbins 1985: 956.

Remarks

The three new specimens collected by us exhibit three parallel black stripes on the dorsal pelage and fit well within the variability of the previously collected *Typomys* of the same species on Mount Nimba concerning their external measurements (Table 7). The skulls display the typical short incisor foramina and dental pattern of *Typomys*. There are no real differences in skull size between *T. planifrons* and *T. trivirgatus* in our sample (Table 8).

The newly collected specimen MNHN-ZM-2014-1027 has a broken skull. The specimen MNHN-ZM-2021-1695 has incisive foramina ending well before the first root of the upper M1/. The CIO is wide and the braincase is globular in shape in the parietal region. The molar rows are relatively small and parallel. The tympanic bullae are small and the occipital foramen very large.

Genus *Dasymys* Peters, 1875
(Tables 7; 8)

Remarks

For a long time only one species of *Dasymys* was recognized and as a result all the West African specimens collected on previous expeditions bear the name *D. incomtus* (Heim de Balsac & Lamotte 1958; Rosevear 1969). A revision of the genus by Carleton & Martinez (1991) rehabilitated the species *Dasymys rufulus* for the West African population, while the name *D. incomtus* holds for South and East African populations. *D. rufulus* has been described from Mount Coffee, Liberia. The specimens from Seredou described by Roche (1971) are morphologically similar to those collected by Heim de Balsac & Lamotte (1958) in Ziela and Yomou labelled *D. i. rufulus*, as well as to our specimens. Gautun *et al.* (1986) did not collect this species, while Coe (1975) and Misonne & Verschuren (1976) collected additional specimens on the Liberian side of Mount Nimba. A morphometric geometric analysis showed that the *D. rufulus* complex is characterized by five morphs that could represent valid cryptic species (Mullin *et al.* 2004). Two new specimens were collected at Mount Nimba during the Guinean survey. We performed a molecular blast on one Guinean specimen that fit well with other *D. rufulus* Genbank specimens PX354163 (cf. Appendices).

Dasymys incomtus rufulus Miller, 1900

Remarks

The shaggy rat from Nimba is characterized by a medium-large size and a short tail, nearly identical in length to the head and body (95 to 105%). The dorsal pelage is brown and the ventral one is yellow grey. Our new specimens fit well within the size range of *Dasymys rufulus* specimens recovered previously on Mount Nimba as well as in Seredou (Guinea) (Tables 7; 8). The skull is robust and characterized by a marked and very narrow interorbital constriction. The braincase is wide with a diamond shape. The nasal bones are enlarged frontally. The incisive foramen is long and ends before the first root of the upper M1/. The molar tooth rows are parallel and large (ratio LS13/LTC: 0.182-0.205 macrodonty) and the wide M3/ ends up just with the posterior border of the palate. The tympanic bullae are relatively small. The zygomatic arches are enlarged at the level of the maxillary/jugal suture. The mandible is high but short. The skull measurements of the newly collected Guinean specimens fit well with previous measurements collected by Coe (1975) in Liberia, Heim de Balsac & Lamotte (1958) and Roche (1971) in Guinea and with those of the holotype from Mount Coffee (Liberia).

On the molars, cusps are bunodont and well-aligned transversally on the first upper molar. The median cusps are large and slightly compressed antero-posteriorly. On the upper M1/, there is a stephanodont crest on the t4 and the cusp t6 ends with a longitudinal crest related to the big t8 but no t9 is visible and it is also absent on the upper M2/. On the M2 and M3/ there is a big transverse t1 but no t3. The upper

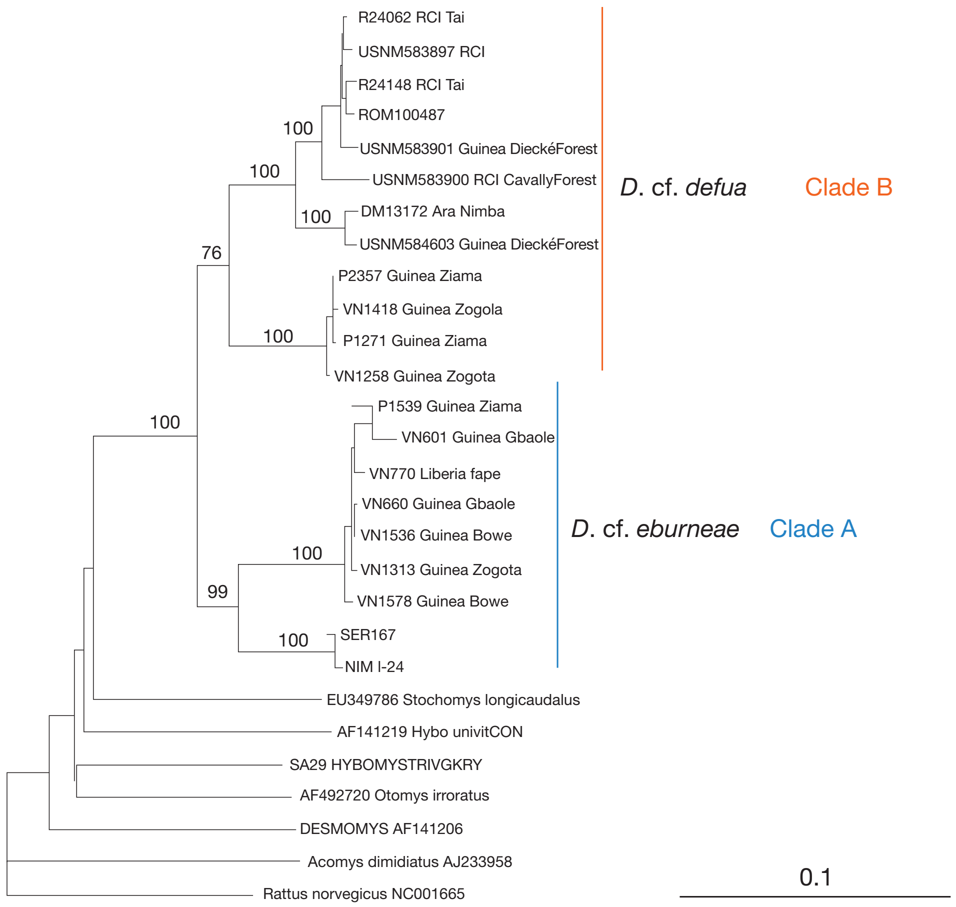

Fig. 7. — Cytochrome B NJ Tree for *Dephomys* spp. Clade A is composed of Guinean specimens and one karyotyped *Dephomys* Thomas,1926 has a karyotype formula below 2N = 50 (SER 187), Genbank accession number PX354161**.** Clade B includes RCI, Guinea, Liberia specimens.

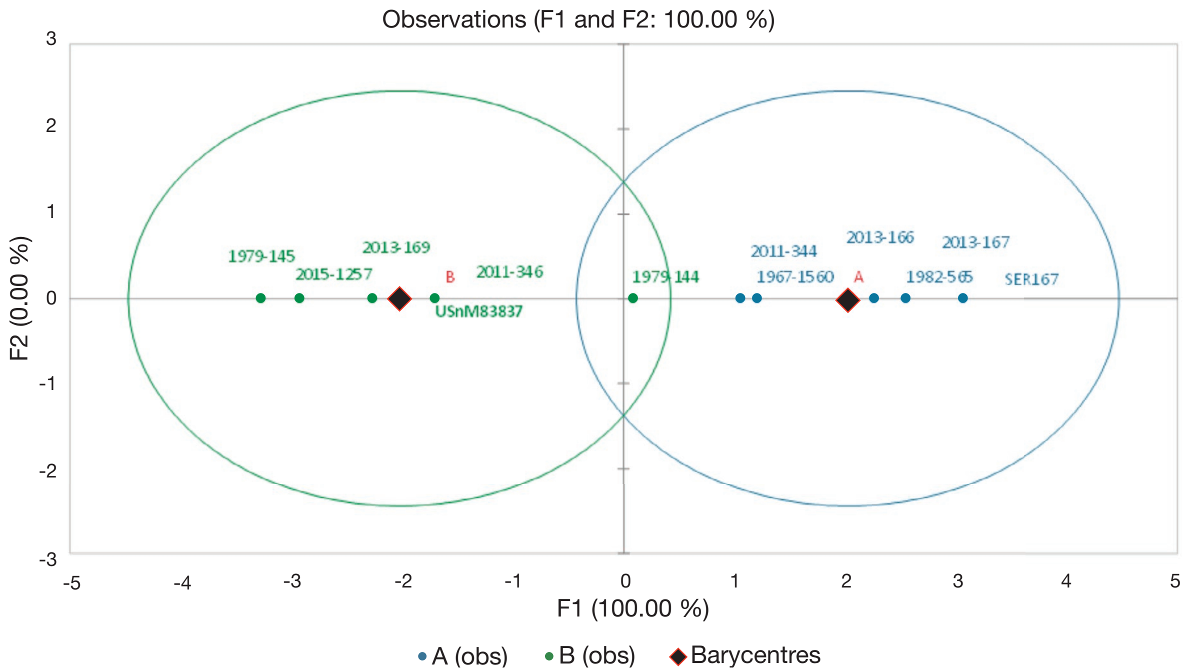

Fig. 8. — Canonical analysis on skull distances of genetically typed clades A and B for *Dephomys* Thomas,1926 specimens (see Appendices 1, 2, 3 for MNHN specimens).

M3/ is longer than the M2/ and has two cusps on the first lobe and one on the second. On the lower molars one can see a tmA and a cv5 on the M/1, no posterior cingulum on the M/1 and a tiny one on the M/2 The M/3 is as long as the M/2 and displays two lobes.

Genus *Dephomys* Thomas, 1926
(Figs 7; 8; Tables 7; 8)

Remarks

The genus *Dephomys* was created by Thomas (1926) for *Mus defua* Miller, 1900 from a specimen collected from Mount Coffee, Liberia. A subspecies named *D. d. eburneae* Heim de Balsac & Bellier, 1967 from Lamto, Côte d'Ivoire provided different chromosomal diploid numbers between northern and southern Côte d'Ivoire (Tranier & Dosso 1979). Then *D. d. eburneae* was further elevated to species rank by Van der Straeten (1984) based upon morphometric and chromosomal characters; but no diagnosis was ever published. Based on these data, it would appear that *D. defua* occurs in the Guineo-Liberian forest block, while *D. eburneae* occurs in the forests of Côte d'Ivoire and Ghana to the east (Heim de Balsac & Aellen 1965; Rosevear 1969; Musser & Carleton 2005). *Dephomys* under the name *D. defua* was recorded by Heim de Balsac & Lamotte (1958), Gautun *et al.* (1986), Coe (1975) and Misonne & Verschuren (1976) on both Guinean and Liberian sides of Mount Nimba.

We found several karyotyped specimens in the MNHN collections displaying two chromosomal formulae (2N > 50 attributed to *D. defua* and 2N < 50 attributed to *D. eburneae* according to Tranier & Dosso (1979) and originating both from Grabo, Adiopodoumé in Côte d'Ivoire. This could indicate that they may be sympatric in part of their distributional range and therefore both may be present at Mount Nimba. Tranier & Dosso (1979, unpublished data) provided chromosomal data and showed a great pelage color variability with age between the two taxa. Also, the dental character of the absence or presence of a cusp t3 on the upper M1 was variable, depending on the wear stage. The latter character was not so discriminant than previously reported (Tranier pers. comm.). Tranier & Dosso (1979) report a relative absence of morphological characters to distinguish between the two chromosomal species but found the width of the upper M1/, the height of the rostrum and the chromosome formula to be effective distinguishing criteria.

We performed molecular and morphometric analyses to verify the possible coexistence of two *Dephomys* species on Mount Nimba and in West Africa. The Neighbour Joining molecular tree indicates the existence of different lineages in West Africa (Fig. 7). The newly collected specimens 2021-1694 (SER167) +NIMII24 are in the same lineage (named Clade A below) and very distinct from the new specimen DM13172 of the Liberian side of the Mount (Clade B). Moreover, the SER167 specimen harbours a 2N = 42 karyotype (Appendix 4). The K2P genetic distance between clades A and B is of 12% and they are sympatric in Côte d'Ivoire and Guinea suggesting the presence of two distinct species. We could not recover the holotype and paratype of *D. eburneae*, which was described from Lamto and Adiopodoume and should be deposited in the MNHN.

The DFA performed on skull measurements of genetically sequenced specimens from Côte d'Ivoire, Guinea and Liberia provides some discrimination between the two clades (Fig. 7). The karyotyped specimens are separated by a size axis (nearly all variables are positively correlated with axis 1), the 2N<50 specimens having on average larger skull measurements. Karyotyped specimens (1979-144 & 1979-145 specimens) from Gabro (Côte d'Ivoire) with 2N = 52-53 are well classified in clade B close to molecularly typed specimens of Ziama (Guinea), Taï (RCI), Zogota (Liberia) (MNHN2011-346, P2357 and MNHN2015-1257 R24148). Specimens with 2N = 42-44 from Adiopodoume (Côte d'Ivoire, 1967-1560 and 1982-565) are close to molecularly typed specimens of clade A from Ziama (MNHN2011-344, P1539) and to the new specimen SER 167 (MNHN-ZM-2021-1694). All specimens used in the FFA were correctly classified (100%) and the axis 1 represents a size axis with specimens of Clade A slightly larger on average (Fig. 8).

The canonical analysis performed on genetically typed specimen on four external measurements provided a lower level of discrimination but the average values of HF length was the most discriminant variable (not figured). Clade A on average had a HF length of 27 mm against clade B with 25 mm. Clade A specimens are larger.

Consequently, here we can be confident that two taxa of *Dephomys* coexist on Mount Nimba as well as in some other West African localities, but naming the non-genotyped specimens remains difficult pending further studies and a larger sample of genetically typed specimens. Following Van der Straeten (1984) the Taï (Côte d'Ivoire) specimens belong clearly to *D. defua*, specimen from Taï in our molecular tree are found in clade B, while specimens from Lamto and Adiopodoumé (Côte d'Ivoire) belong to *D. eburneae* (Clade A). We provisionally attribute clade A to *Dephomys* cf. *eburneae* and clade B to *Dephomys* cf. *defua* pending on a further revision of the whole genus.

Dephomys* cf. *eburneae
Heim de Balsac & Bellier, 1967

Dephomys defua eburneae Heim de Balsac & Bellier, 1967: 157.

Dephomys eburneae Van der Straeten 1984: 771.

Remarks

The male specimen from Serengbara MNHN-ZM-2021-1694 (SER167) displayed the typical aspect of the genus, with a wooly pelage of grey-brown colour, a very long tail with a tiny tuft, short ears and long hindfeet. Its karyotype (2N = 42, NFa = 52 or 54) is identical to that known for *D. eburneae* described by Tranier & Dosso (1979) from Adiopodoumé in Côte d'Ivoire. Looking at external standard measurements we can see that the newly collected specimen of clade B have

TABLE 8. — Nimba Muridae Illiger,1811 skull measurements in mm. **N**, number of individual measurements; **Min-Max**, minimum and maximal values. For skull abbreviation measurements see Material and methods.

Taxon	Number	N	LGT	WZYG	CIO	LNAS	WNAS	WOCC	LPALFOR	UTR	LBT	LMDB	HMDB	LTR
G. kempii	MNHN-2014-980	1	41.4	–	6.8	16.9	5.6	17.1	8.4	6.87	11.8	27.1	10.9	6.74
G. kempii	MNHN-1997-1562	1	40.2	19.9	7.1	15.7	4.3	–	7.9	6.4	11	25.4	10.96	6.14
G. kempii	MNHN-1997-1563	1	40.6	18.99	6.9	16.2	4.66	16.2	6.81	6.32	10.65	26.24	10.55	6.31
Arvicanthis sp.	MNHN-1955-660	1	32.1	16.8	5.1	10.3	4.2	13.7	–	6.5	6.65	22.4	11.9	6.67
T. trivirgatus	MNHN-2021-1695	1	32 .4	14 .8	6 .3	12 .6	4 .6	13 .8	5 .4	4 .78	5 .3	20 .2	6 .4	4 .95
T. trivirgatus	MNHN 2014-1027	1	31 .8	–	6 .5	13 .3	4 .3	14 .6	4 .4	5 .11	6 .2	20 .1	6 .6	5 .12
T. planifrons	MNHN-1991-2099	1	34 .2	15 .9	6 .70	13	4 .7	13 .7	5 .3	5 .09	6	22	8 .9	4 .73
D. rufulus	MNHN-2011-578	1	33 .9	17 .2	4 .40	12 .7	5 .8	13 .6	–	6.92	5.5	23 .9	12 .1	6 .84
D. rufulus	MNHN-2021-1693	1	33.9	17.0	4.3	11.9	4.6	13.9	–	6.95	5.2	23.9	122	6.4
D. rufulus	NHM 68.1198-1201	3	35.8	18.1	4.3	13.8	4.9	14.1	–	6.7	6	24.7	12.1	6.46
	Min-Max	3	33.9-37.4	17.4-18.8	4-4.5	12-15	4.6-5.2	13.7-14.3	–	6.5-6.95	5.9-6	23.5-26.2	11.2-12.8	5.7-7.2
D. rufulus	MNHN Lamotte	2	34.8-35	17-17.9	4.7-4.8	12.5-13.6	4.5-4.7	13-14.4	–	6.8-7.1	5.3-5.8	24-24.1	10.4-11.9	6.52-6.8
D. cf. *eburnea*	MNHN-2021-1694	1	34.88	15.75	5.5	13.7	4	128	–	5.57	4.8	21.9	9.7	5.41
D. cf. *defua*	DM13172	1	29.9	14.8	5.6	–	–	13.3	–	4.92	–	18.3	8.7	5.18
Dephomys sp.	NHM Mean	18	33.1	15	5.7	12.3	4.2	13	5.6	5.2	4.4	20.3	9.2	5.09
	Min-Max		31.1-35.8	13.2-16.4	5.2-6.7	10.5-14.5	3.6-4.9	12.4-14	4.4-6.5	4.8-5.5	4-4.9	18.4-23.5	8.3-10.3	4.49-5.5
G. macmillani	MNHN-2014-1016-1018	3	27.2	13.9	4.5	>8.5	3.5	11.5	–	4.08	4.6	16.9	7.2	4.06
–	Min-Max		25.5-28.2	13-14.4	4.2-4.6	–	2.9-4.1	9.9-12.4	–	3.7-4.3	3.8-5.1	15.2-18.1	5.8-8.4	3.8-4.2
G. macmillani	MNHN-ZM-MO-1991-2114	1	32 .5	16 .7	5 .7	11 .4	4 .2	12 .4	–	5 .6	4 .8	21 .3	8 .1	5 .72
G. macmillani	MNHN-ZM-MO-1991-2115	1	33 .4	15 .9	5 .5	11 .8	3 .8	13	–	5 .87	5 .1	20 .4	8 .7	5 .65
L. macculus	MNHN-ZM-MO-1992-207	1	24.5	–	4.5	–	–	10.7	3.8	4.01	–	–	–	4.79
L. macculus	MNHN-ZM-MO-1987-358	1	26.4	–	4.7	–	3.5	12.2	5.6	4.06	4.5	15.9	6.6	3.99
L. striatus	MNHN-ZM-2021-1696	1	29.1	13.6	4.9	10.2	4.6	127	5.5	4.9	5.6	191	7.5	5.1
L. striatus	MNHN-ZM-2014-979	1	26.8	12.4	4.7	9.9	3.8	11.8	–	5.28	4.6	17.2	7.5	5.1
L. striatus	MNHN-ZM-2014-978	1	28.6	13.4	4.9	9.6	3.7	12.3	–	5.28	4.9	17.9	8.1	4.88
L. striatus	MNHN-ZM-MO-1981-1121	1	27	13	4.6	9.9	4.	11.5	4.83	4.89	4.7	16.5	7.5	4.6
L. striatus	MNHN-ZM-MO-1991-2147	1	29.56	14.1	4.93	10.84	4.1	12	5.64	5.30	4.9	18.1	8.7	4.94
O. ornatus	MNHN-ZM-MO-1981-1120	1	34.71	16.1	5.12	13.87	4.2	12.87	6.27	6.27	5.8	21	8.7	5.92
M. edwardsi	MNHN-ZM-MO-1991-2107	1	36.7	–	5.7	14.3	3.8	12.8	6.6	4.98	4.6	23.1	8.	4.72
M. edwardsi	MNHN Mission1+3 Mean	25	37.3	15.4	5.7	14.4	3.9	12.9	6.5	4.9	5.2	22.8	8.2	4.8
	Min-Max	–	34.1-40.1	13.9-16.2	5.2-6.1	11.4-17.3	3.3-4.75	11.1-13.9	5.3-7.3	4.5-5.3	4.5-5.7	19.1-25.1	6.5-9	4.4-5.2
M. cansdalei	DM13173	1	41	18.6	6.3	–	–	15.5	–	5.83	–	21.2	–	5.71
M. cansdalei	NHM-46.460 Holotype	1	> 35	–	5.8	15.7	4.5	–	4.6	5.09	–	25.2	8.3	5.13
M. cansdalei	NHM-46.459 Paratype	1	40.6	16.6	6.1	15.1	4.8	14.4	6.3	5.06	5.2	26.4	8.8	4.88
P. rostratus	MNHN Mission 1+3 Mean	28	33.14	15.1	5	12.8	4.1	12.0	6.9	4.92	4.6	21.7	8.8	4.97
	Min-Max	28	30.4-36.2	12-16.4	4.3-5.7	10.35-15.6	3.05- 4.7	11.1-12.9	5.6-8.1	4.3-5.4	4.2-5.1	18.5-24	7.2-10.9	4.2-8
P. tullbergi	MNHN Missions 1+3 Mean	12	29.2	13.6	4.7	11.6	3.8	11.1	6.1	4.52	4.2	18.5	7.5	4.52
	Min-Max	12	25.8-31.7	12.6-15	4.4-4.9	9.9-13	3.3-4.2	10.3-12.2	5.3-6.9	4.15-5	3.2-4.6	15.6-20.4	6.4-8.6	4.3-4.7
H. simus	MNHN Mission 1 Mean	9	22.7	10.6	4.4	7.6	2.7	9.6	–	3.7	3.6	15.1	6	3.7
	Min-Max	9	18.2-25	9.1-11.8	4-4.7	6.2-8.4	2.1-3.2	9-10.3	–	3.2-3.9	3-3.8	13.3-16.4	5.2-6.6	3.4-3.8
H. simus	MNHN Mission 3 mean	8	23. 2	11 .3	4 .3	7 .9	2 .9	10 .3	–	4 .23	3 .8	15 .1	6 .3	3 .73
	Min-Max	8	20.4-24.4	8.6-12.3	3.9-4.7	6.9-8.6	2.5-3.2	9.9-10.8	–	3.6-4.9	3.6-4.2	13.5-16.1	5.3-6.9	3.5-4.3
H.simus	MNHN Lamotte Mean	5	23.7	11.6	4.4	8.2	3.08	10.5	–	4.07	3.6	15.8	6.2	3.73
	Min-Max	5	21.5-25	10.7-12.5	4.2-4.8	7.9-8.8	2.9-3.3	10.2-11	–	3.8-4.5	3.5-3.8	14.2-17	5.2-6.8	3.5-3.9
M. erythroleucus	MNHNMission 1	2	26.5-29.6	11.8-13.8	4-4.3	10-10.8	2.5-3.2	10.3-11	–	4.6-4.9	4.6-4.7	16.6-18.7	7.3-8	4.5-4.6
M. minutoides	MNHN Mission 1 Mean	6	17.3	8.2	6.3	2.2	3.5	8.	–	3.27	3.0	10.4	4.	2.72
	Min-Max	6	15.9-17.9	7.2-8.8	6.2-6.5	2.03-2.6	3.3-3.6	7.5-8.2	–	2.9-3.6	2.8-3.3	10-10.8	3.6-4.5	2.5-2.8
M. minutoides	MNHN- Mission 3 Mean	14	17.2	8.7	6	2.4	3.3	7.8	–	3.02	2.9	11	4.2	2.43
	Min-Max	14	15.5-18.1	8-9.3	5.3-6.3	2.1-2.5	3.15-3.6	7.3-8.5	–	2.7-3.6	2.4-3.6	10.5-11.2	3.6-4.7	2.2-2.7

Table 8. — Continuation.

Taxon	Number	N	LGT	WZYG	CIO	LNAS	WNAS	WOCC	LPALFOR	UTR	LBT	LMDB	HMDB	LTR
M. setulosus	MNHN- Mission 1	4	20.2	9.5	7.1	2.6	3.8	9.1	–	3.91	3.7	13.1	4.8	3.19
	Min-Max	4	19.5-21.4	9-10.05	6.4-7.5	2.4-2.7	3.7-4.1	8.6-9.7	–	3.6-4.5	3.2-4	12.4-13.6	4.3-5.05	2.9-3.5
M. setulosus	MNHN Mission 3 mean	17	20.1	9.8	7.0	2.65	3.8	8.9	–	3.31	3.3	13.0	4.6	2.92
	Min-Max	–	18.9-21.7	8.9-10.3	6.1-8	2.2-3.2	3.45-4.1	8.2-9.6	–	2.7-4	2.9-3.6	12.1-14.4	3.8-5.3	2.6-3.2
Mus baoulei	MNHN-ZM-2011-570	1	18.4	8.6	7	2 .5	3 .7	8 .8	–	3 .5	3 .3	12 .9	4 .3	2 .99
U. ruddi	MNHN-ZM-MO-1981-1123	1	25 .6	13	4 .9	9 .1	3 .1	11 .2	–	4 .71	3 .8	19 .1	7 .4	4 .31
L. sikapusi	MNHN- Mission 1 Mean	39	29.8	14.1	11.	3.6	6.6	12.7	–	4.91	5.2	20	7.	4.72
	Min-Max	39	26.8-31.5	12.2-15.2	8.6-12.8	2.53-4.22	6.1-7	11.9-13.5	–	4.6-5.2	4.3-6	17.1-21.4	5.6-8.2	4.4-5
L. sikapusi	MNHN-ZM-MO-1991-2076 & 1997-1510	2	30.3-31.3	12.7-13	12.5-13.2	–	6.6-6.8	13.1-13.8	–	4.71-4.92	–	18.5-19.35	–	4.45-4.83
L. sikapusi	MNHN Mission 3	17	31.	15.5	11.3	3.9	6.7	12.9	–	4.95	5.2	20.8	7.4	4.78
	Min-Max	17	30-32.4	14.8-16.1	10.1-12.1	3.2-4.4	6.4-7	12.1-13.4	–	4.7-5.3	4.5-5.7	18.1-22.9	6.8-8	4.3-5.2

a smaller hind foot length compared to clade A and this is also visible in old MNHN karyotyped specimens (Table 7). However, our sample here is too small to acknowledge this size difference for species discrimination.

The skull is long with a large braincase that is defined by a well-marked supraorbital crest. Frontal bones are flat while nasals and parietal bones are raised. The nasal bone is long, ending above the short proodont incisors. The tympanic bullae are very small compared to the size of the skull (between 3.87 mm and 4.89 mm). The glenoid foramen is round and well visible above the tympanic bullae. The palate is short ending just after the upper M3. Specimen MNHN-ZM-2021-1694 (SER167) is adult and its measurements fit well with other NHM specimens from Mount Nimba. It is larger than *D. defua* from Côte d'Ivoire, particularly its molar row length. Specimen MNHN-ZM-2021-1694 (SER167) looks similar to *D. eburneae* sharing the same basic karyotype (Table 8).

Dephomys **cf.** ***defua*** (Miller, 1900)

Mus defua Miller, 1900: 635.

Remarks

The specimen DM13172 has been sequenced and belongs to clade B that corresponds well to *Dephomys* cf. *defua* as defined above (Fig. 7). No external measurements were available for this specimen. DM13172 was a pregnant female, but its skull measurements look small compared to other Nimba specimens. There are no clear morphological differences in the skin characters between *D.* cf. *eburneae* and *D.* cf. *defua*. In size we noticed a difference in the hindfoot length, which could be smaller in *D.* cf. *defua* (Table 7). On specimen MNHN-ZM-2013-169, the nasal is long and wide, the fronto-parietal crests rectilinear and moderately marked, and the braincase rounded. In ventral view, the incisor foramen is long and enters in the middle of the toothrows, the palate is wide and molar rows oblique. The tympanic bullae are oval. The molecularly typed specimen from Côte d'Ivoire and Guinea harbor a large t3 on the upper M1/ and a t3 bis which is sometimes visible. But the large variability observed for this character does not allow for a reliable specific identification. The dental characters are very similar to those observed in genetically typed specimens attributed to *D.* cf. *eburneae*.

Genus *Grammomys* Thomas, 1915 (Tables 7; 8)

Remarks

Grammomys remained confounded with *Thamnomys* for a long time, but recently, molecular analyses have confirmed the validity of these two genera (Bryja *et al.* 2017, 2024; Mikula *et al.* 2021). In West Africa, only one clade was recognized, *Grammomys buntingi* Thomas, 1911 (holotype NHM-11.7.28.27 from Bassa, Liberia). Heim de Balsac & Lamotte (1958) recorded the presence of *Grammomys* (*macmillani?*) *buntingi* in Guinean side of the Mount Nimba. The genus was not collected by Coe (1975), Gautun *et al.* (1986) or Misonne & Verschuren (1976). The new specimens collected during our expeditions in Liberia have been sequenced and are all attributed to *G. buntingi* (Bryja *et al.* 2017). A recent revision using phylogenomic analyses however, put *G. buntingi* in synonymy within the *G. macmillani* clade (Bryja *et al.* 2024)

Grammomys macmillani (Wroughton, 1907)

Thamnomys macmillani Wroughton, 1907: 504.

Thamnomys buntingi Thomas, 1911: 381.

Grammomys buntingi – Thomas 1915 : 150.

Remarks

The Nimba *Grammomys* are very similar to the type specimen of *G. buntingi* from Bassa in displaying a brown-grey dorsal pelage with more yellow-brown hairs above the rump, a white-grey belly and a long tail ending with a tuft of brown-red hairs. The skull displays a short nasal and a relative globular braincase with a well marked interorbital constriction. The CIO is underlined by fronto-parietal crests. On the ventral side, the incisive foramina stop at the level of the first root of the upper M1. The dental rows are small and quite parallel, the tympanic bullae are small. In size, the skull of *G. macmillani buntingi* of Nimba fits well within the variability of other Guinean and Sierra Leone specimens and are close to the holotype measurements. On the upper molars, T7 is absent from the upper M1, which corresponds to the *Grammomys* genus definition (Thomas 1915). Specimen MNHN-ZM-2014-1016 (stage 2) and MNHN-ZM-2014-2017 and 2018 (stages 5) are characterized by small molar rows and display the same cusp arrangement as the holotype. The upper M3 is small, cusps are relatively round and bunodont with some light stephanodont crests relating longitudinally cups between rows. These stephanodont crests are peculiarly visible on the t3 of the upper M1/ and between t6 and t9. On the lower molars, cusps alternate with slight crests. There is no t7 on the upper M12 but a crest relating t4 to t8. There is a tma on the lower m1 and many variable labial cingular cusplets surrounding cv5

Genus *Lemniscomys* Trouessart, 1881
(Tables 7; 8)

Remarks

Four species of striped mice are known to occur in West Africa: *Lemniscomys striatus* Linnaeus, 1758, *L. linulus* Thomas, 1910, *L. zebra* Heuglin, 1864 and *L. bellieri* Van der Straeten 1975 (Denys *et al.* 2020). A single species was reported on Mount Nimba, *L. striatus* (Heim de Balsac & Lamotte 1958; Coe 1975; Misonne & Verschuren 1976). However, we found two specimens assigned to *L. bellieri* in the MNHN collections. A recent study has shown morphological and genetic differences between the three *Lemniscomys* species found in Guinea (Denys *et al.* 2020). A molecular revision at the continental scale has demonstrated that pelage coloration patterns do not reflect phylogeny (Hánová *et al.* 2021). According to these authors, the *bellieri* specimens from the type locality (Lamto, Côte d'Ivoire) are in the same clade as the *L. macculus* representatives of Central African Republic and Ethiopia, and hence they proposed that these two species are synonymous (Hánová *et al.* 2021). *Lemniscomys striatus* displays a standard karyotype of 2N = 44 in Côte d'Ivoire (Tranier, Dosso, Gautun unpublished, pers. comm.), 2N = 43-44 in Burkina Faso (Gautun *et al.* 1986) and 2N = 44, NFa = 66 in coastal Guinea (Denys *et al.* 2009). *Lemniscomys bellieri* is characterized by 2N = 58 (van der Straeten 1975).

Lemniscomys macculus bellieri Van der Straeten, 1975

Lemniscomys bellieri Van der Straeten, 1975: 906.

Arvicanthis macculus Thomas & Wroughton, 1910: 515.

Lemniscomys macculus – Hollister 1919: 138.

Lemniscomys macculus bellieri – Hanova *et al.* 2021: 11.

Remarks

Two specimens attributed to *L. macculus bellieri* were found in the MNHN collections from Mount Nimba. They are not in proper condition and could not be genotyped. We keep these specimens under this attribution pending the discovery of further specimens and provide some characters for their identification following the key of Denys *et al.* (2020).

External measurements are missing for both specimens and we could not examine skin morphology. The skull of MNHN-ZM-MO-1992-207 corresponds to an adult female but is badly broken. The LGT is approximately 24.5 mm (but cannot be measured accurately because the skull is damaged). The specimen MNHN-ZM-MO-1987-358 is an adult with a relatively small-sized skull (LGT < 30 mm), with an LBT/LGT ratio of 16.87%, which fits well with *L. macculus bellieri* according Denys *et al.* (2020). On the skull of MNHN-ZM-MO-1987-358 the skull is small and the braincase round with no fronto-parietal crests (Table 8). In ventral view, the tympanic bullae are smaller than in the holotype of L. m. *bellieri* and the other specimens attributed to this species. The incisive foramen is long entering the molar row. The molars display the typical pattern of *Lemniscomys*, but we were unable to find a dental diagnostic character that distinguishes *L. macculus bellieri* and *L. striatus* (Denys *et al.* 2020).

Lemniscomys striatus (Linnaeus, 1758)

Mus striatus Linnaeus, 1758: 62.

Lemniscomys striatus – Trouessart 1881: 124.

Remarks

On Mount Nimba the newly collected *Lemniscomys* specimens were barcoded and belong unambiguously to *L. striatus*. One specimen of the Guinean Nimba provided the typical *L. striatus* karyotype.

The striation pattern of its pelage and the standard karyotype or the Guinean Nimba new specimen (MNHN-ZM-2021-1696, 2 N = 45) allow to attribute it unambiguously to *L. striatus* (2 N = 44-45). The two new Liberian specimens (MNHN-ZM-2014-978 and 2014-979) were molecularly typed and matched well with *L. striatus*. They display the brown colour of the pelage, yellow white spots, eight bands of brown spots alternating with yellow cream ones that characterize *L. striatus* (Denys *et al.* 2020). The standard measurements of the New Nimba specimens of *L. striatus* fit well with the proportions of the specimens of the Lamotte collections and other Guinean specimens (Table 7). Here the greatest length of the skull is > 29 mm for adults, the incisor foramen rectilinear ends between the first root of M1/ and the anterior part of nasal bones is rectilinear on each side of the median suture, which corresponds to *L. striatus* according to the key provided by Denys *et al.* (2020) (Table 8). The molars of the new specimens of *L. striatus* from Nimba correspond well to the description of Denys *et al.* (2020) with cusps t2 and t3 of the M1/ prelobe aligned transversally, the large upper M3/ with 5 cusps, the tubercles of the lower M/1 are well aligned and relatively bunodont.

Genus *Mylomys* Thomas, 1906
(Table 7)

Remarks

The genus was created for *Mylomys cunninghami* Thomas, 1906 from Kenya, but a later revision placed it in synonymy with *Mylomys dybowskii* Pousargues, 1893 (Central African Republic). In West Africa the species is found in Guinea (Gautun *et al.* 1986), Côte d'Ivoire (Heim de Balsac 1967) and Ghana (Rosevear 1969). At Mount Nimba, the species was mentioned by Gautun *et al.* (1986) who collected a single specimen in high altitude savanna on the Guinean side. We were unable to trap any new specimens during our surveys.

Mylomys dybowskii (Pousargues, 1893)

Golunda dybowskii Pousargues, 1893: 163.

Mylomys dybowskii – Thomas 1906: 224.

Remarks

The MNHN-ZM-MO-1998-1013 specimen was karyotyped and its chromosome formula is 2N = 42, NF = 52 (Gautun *et al.* 1986) like other representatives of Côte d'Ivoire (Matthey 1970). Morphologically this specimen agrees well with the type specimen but it corresponds to a juvenile individual (Table 7). The pelage is dorsally bicolored (speckled) with a brown general dominant coloration and the bicolored tail is dark above and light below. Contrary to *Arvicanthis* Lesson, 1842 it has three digits on the hindfoot and four on the forefoot, as well as a white belly. The juvenile Nimba specimen was in alcohol and is poorly preserved. The skull is robust, the rostrum wide with a sharp occipital, there is a long and wide infraorbital foramen. The molars are large and characterised by a selenedont pattern of the cusps (UTR: 8 mm; Upper M1/ Width: 1,7mm). The cusps are high and are not fused in laminae. This is also visible on much worn molars of other specimens of the species. The central cusps are high and prominent (t2, t5 et t8) in the upper molars.

Genus *Oenomys* Thomas, 1904

Oenomys hypoxanthus ornatus Rosevear, 1969
(Tables 7; 8)

Oenomys hypoxanthus ornatus Rosevear, 1969: 344.

Remarks

Specimens belonging to this taxon were reported by Heim de Balsac & Lamotte (1958) for the first time as *O. hypoxanthus ornatus*. Rosevear (1969), followed by Tranier & Gautun (1979) who described its distinctive morphological and cytogenetical characteristics, elevated it to species rank. *Oenomys ornatus* is endemic to West Africa and has been recorded in Côte d'Ivoire, Liberia, Guinea, Ghana and Sierra Leone. Misonne & Verschuren (1976) collected four supplementary specimens on the Liberian side of Mount Nimba. We were unable to capture new specimens during our recent surveys.

A single MNHN specimen collected by Lamotte had external standard measurements (Table 7). It is characterized by reddish pelage around the nose, a grey-brown dorsal pelage with reddish flanks, hindfeet and back, and a white belly. A comparison with *O. ornatus* specimens from Seredou (Guinea) and the two karyotyped specimens from Côte d'Ivoire shows their great similarities in size and morphology but some differences with the holotype. The Nimba specimen is one of the largest compared to other Guinean representatives. The skull of the Nimba *Oenomys* is robust with a large rostrum (Table 8). On the ventral side the infra-orbital foramen just stops at the level of the first root of the upper M1/. The incisive foramina are broad in front and strongly narrower behind. The two upper molar rows are large and nearly parallel, the palate is very narrow. The tympanic bullae are moderately inflated and represent about 15% of the greatest length of the skull. In size, the Nimba specimen is larger than the holotype of *O. ornatus* but fits within variability of the karyotyped specimens from Côte d'Ivoire and from Seredou (Guinea). The molars of the Nimba specimen are relatively worn (stage 4) but they display a typical stephanodont pattern with crests developed longitudinally for each cusp of the upper molars. On the M1 and the M2 the central row of the cusps is large and round, there are some supplementary cusplets and the t9 is small but present. The upper M3/ is long and its first lobe has two cusps related to the second lobe on the labial side. Cusps are alternate on the lower m1, there is a tmA and a cv5 on the m1 and the posterior cingulum is small.

Genus *Malacomys* Milne-Edwards, 1877 (Tables 7; 8)

Remarks

For a long time, the number of species and subspecies within *Malacomys* has been heavily debated. According to the most recent morphological and genetic data (Bohoussou *et al.* 2014, 2015), three species can be recognized within this genus, two being present in West Africa (*M. edwardsi* Rochebrune, 1885 and *M. cansdalei* Ansell, 1958). Heim de Balsac & Lamotte (1958) and Heim de Balsac & Aellen (1965) placed the Nimba specimens into *M. longipes edwardsi*. The holotype of *M. edwardsi* was collected in the margin of river Malacore at the Liberia-Guinean border. It is characterized by 2N = 48, NF = 52 (Matthey 1958, Van der Straeten & Verheyen 1979, Tranier pers. com.). According to Gautun *et al.* (1986), two species of *Malacomys* are known on Mont Nimba: *M. edwardsi* and *M. longipes giganteus* Bellier & Gautun, 1968. *Malacomys l. giganteus* was later synonymized with *M. cansdalei* by Musser & Carleton (2005). A phylogeographic and morphometric analysis confirmed that in West Africa the two species present are *M. edwardsi* and *M. cansdalei* (Bohoussou *et al.* 2014, 2015) and are clearly distinguished by size.

Heim de Balsac & Lamotte (1958) briefly described nine specimens collected on the Guinean side of Mount Nimba as belonging to *M. edwardsi*. On the Liberian side Coe (1975) and Misonne & Verschuren (1976) only found *M. edwardsi*. During our new surveys, we collected both species of *Malacomys* on Mount Nimba and all the newly collected specimens were sequenced.

Malacomys edwardsi Rochebrune, 1885

Malacomys edwardsi Rochebrune, 1885: 87.

Remarks

We karyotyped two specimens in the field that provided a chromosome formula of 2n = 48, NFa = 48: MNHN-ZM-2022-944 (SER 164) and MNHN-ZM-2022-945 (SER187), both from Serengbara (Guinea) (Appendix 4).

The smaller HF (<37 mm) and relatively smaller size of our specimens allowed us to attribute them in the field to *M. edwardsi*, which was later confirmed by molecular analysis. They harbour a soft short and dense pelage of dark brown color dorsally and a light grey belly similar to the holotype of *M. edwardsi*. The tail is longer than the HB length, bicolored and without hairs. The hands and feet are white, while the large translucent ears are black. The nose is long with long vibrissae (> 5 cm). In size the new specimens from Nimba and Liberia fit well with specimens collected by Lamotte and Coe (1975). They are smaller than *M. cansdalei*, especially in their hindfeet length (Table 7).

The skull is long (*c.* 38 mm) with a prominent long rostrum. The incisive foramina and pterygoid fossae are wide. The anteorbital foramen is very wide and the zygomatic plate small. The molar rows are small (microdont). The older specimens from Mount Nimba (MNHN-ZM-MO-1991-2107) fits well within the variability of the newly collected specimens both from Liberia and Guinea (Table 8). The molar rows are very narrow and relatively small compared to the skull length. When barely worn the big t1 of the upper M1 is isolated from the t2 and t3 and large and round. The t2 and t3 are not well differentiated, fused in a single transverse lobe. The t4 is posterior to the t5 and slightly at the same level as t6. t9 is either very small or absent on both M1 and M2. There are two lobes on the M3 which counts three cusps. On the lower molars, there is a longitudinal link between the prelobe and the first chevron. There is a big posterior cingulum on the m12. The second lobe of the m3 shows traces of two cusps when unworn.

Malacomys cansdalei Ansell, 1958

Malacomys longipes cansdalei Ansell, 1958: 342.

Remarks

This large species is represented on Mount Nimba by a single specimen found during Mission 2 in Bentor 1 (Liberia). The tail is bicolored and there is a light frontal spot. The holotype of *M. cansdalei* displays a white belly sharply delimited from the brown dorsal pelage. The specimen DM13173 was barcoded and its Cyt B sequence fits well with other specimens of *M. cansdalei*. The new Nimba specimen DM13173 displays very long hindfeet (42.7 mm) and its external measurements fit well the *M. cansdalei* holotype and paratypes (Table 7).

The holotype displays small and short incisor foramina; the pterygoid fossa is well behind the M3 which distinguishes the species from *M. edwardsi* according to Bellier & Gautun (1968). The molar rows are very narrow like in *M. edwardsi* and relatively small compared to the skull length. The strong t1 of the upper M1 is not isolated from the t2 and t3 and is posterior compared to the t2-t3. The t2 and t3 are not well differentiated, fused in a single transverse lobe. The t4 is posterior to the t5 and t6 and display a small longitudinal crest. The t9 is small but it remains visible on M1 but not on M2. The upper M3 has a big t1 like on the M12, there are two lobes on the M3 which counts three main cusps. On the lower molars, there is a longitudinal link between the prelobe and the first chevron. There is a big posterior cingulum on the m12. The second lobe of the m3 shows trace of a single cusp. However, the two cusps of the first chevron are more aligned transversally than in *M. edwardsi*. The second lobe of the m3 is much narrower than in *M. edwardsi* and there is no trace of a second cusp.

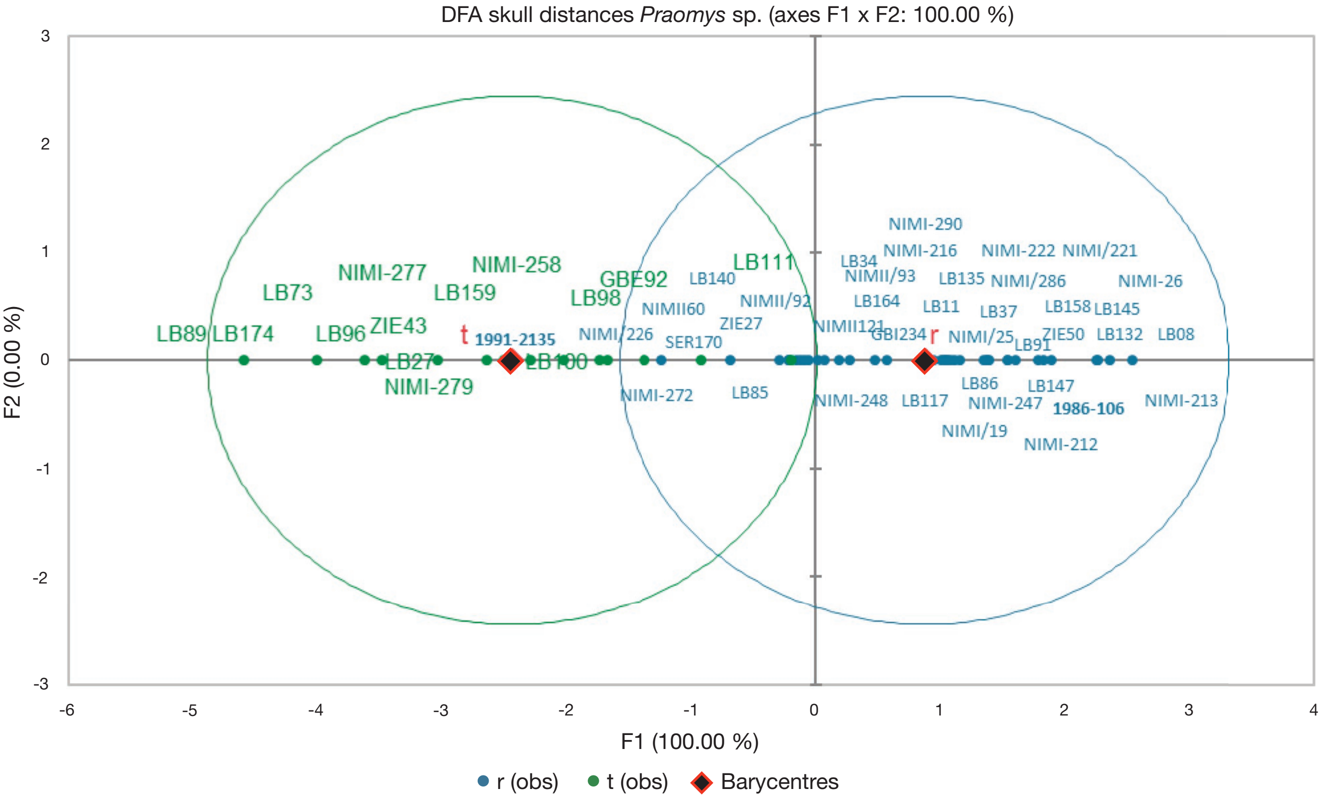

Fig. 9. — Canonical analysis of *Praomys* spp. specimens on 55 individuals and 10 skull variables. In **bold** specimens from MNHN Lamotte collection identified *a posteriori*. **t**, *Praomys tullbergi* Thomas,1892; **r**, *Praomys rostratus* Miller, 1900 (see Appendices 1, 2, 3 for MNHN specimens voucher numbers).

Genus *Praomys* Thomas, 1915
(Fig. 9; Tables 7; 8)

Remarks

Two species of *Praomys* are known to occur in sympatry in West Africa (Akpatou *et al.* 2007; Nicolas *et al.* 2008). In the Guinean Nimba, Heim de Balsac & Lamotte (1958) mentioned *P. morio* (now restricted by Van der Straeten to Mount Cameroon and Bioko named now *P. tullbergi*) and *P. jacksoni* (correct attribution as *P. rostratus* according to Van der Straeten & Verheyen (1981)). Coe (1975) recorded 94 specimens attributed to *P. tullbergi* and Misonne & Verschuren (1976) also recovered more than 100 specimens on the Liberian side of Mount Nimba indicating that they represent a single homogeneous series. Gautun *et al.* (1986) indicated that they karyotyped *Praomys* from Mount Nimba that displayed the typical 2N = 34 chromosomes that fits with *P. tullbergi*. But, both *P. tullbergi* and *P. rostratus* species share the same karyotype and have been considered as sibling species by Nicolas *et al.* (2008) and Akpatou *et al.* (2007). During fieldwork in 2008, we only recorded one formula for all six karyotyped specimens (2N = 34, NFa = 32). The analyses of the sequenced specimens confirmed the coexistence of *P. rostratus* and *P. tullbergi* at Mount Nimba. One specimen molecularly attributed to *P. tullbergi* (MNHN-ZM-2021-1848) and another to *P. rostratus* (MNHN-ZM-2021-1846) displayed the same karyotype. Because Van der Straten & Verheyen (1981) and Akpatou *et al.* (2007) found morphometrical differences between these two species, we performed a discriminant analysis on skins and skulls of all the *Praomys* from our survey.

The canonical analysis was performed upon 55 individuals of which 38 were molecularly attributed either to *P. rostratus* or *P. tullbergi* and using 10 skull measurements. This allowed us to effectively separate both species with 90.6% correct classification, after cross-validation, and to confirm the presence of both species on the Guinean and Liberian sides of Mount Nimba (Fig. 9). On the canonical analysis, we found axis 1 is a size axis because all variables were positively correlated and specimens organized by size along this axis. Among the indeterminate specimens in the Lamotte collection, one fitted within *P. tullbergi* (MNHN-ZM-MO-1991-2135) close to the barycenter and another specimen groups without ambiguity within the *P. rostratus* group (MNHN-ZM-MO 1986-106) (Fig. 9). The newly collected specimens, that were not examined genetically, were classified within *P. rostratus.*

During our recent fieldworks we collected 20 *Praomys tullbergi* and 41 *P. rostratus* (all studied genetically or morphometrically) both on the Guinean and the Liberian sides of Mount Nimba. The old Nimba specimens or broken skulls of the newly collected specimens that could not be identified to species level were labeled as *Praomys* sp.

Moreover, one specimen of *Praomys daltoni* (Thomas, 1892) is recorded in the MNHN collections. It was collected at the Airfield locality, Liberia and would constitute the third species of *Praomys* from Mount Nimba. The specimen MNHN-ZM-MO-1992-199, was recorded as "prepared in alcohol, skull prepared" in the MNHN collection catalogue, but we were unable to locate the skin of this rodent and found only a prepared skull without mandible. There were no external measurements available. The skull and dental morphology only allowed us to attribute it to *Praomys* sp. Because no *P. daltoni* have yet been mentioned by previous authors from Mount Nimba we maintain that the species is not present on Mount Nimba Mount. However, this taxon is very widespread in Sahelo-Sudanian savannas (Mikula *et al.* 2020).

Praomys rostratus (Miller, 1900)

Mus tullbergi rostratus Miller, 1900: 637.

Praomys tullbergi rostratus – Rosevear 1969: 400.

Remarks

Described from Mount Coffee in Liberia, it was neither recorded by Heim de Balsac & Lamotte (1958) nor by Gautun *et al.* (1986) from the Guinean side of Mount Nimba, perhaps due to a lack of taxonomic knowledge at that time when *P. rostratus* was typically confounded with *P. tullbergi*.

The Nimba *P. rostratus* are characterized by a dorsal reddish-brown pelage and a white belly with a grey basis. The tail is longer than HB (mean Tail: HB ratio: 112%, range: 105-128). The main difference between *P. rostratus* and *P. tullbergi* is size, with *P. rostratus* being larger and heavier on average than *P. tullbergi*. *Praomys rostratus* has a longer hindfoot (mean: 24.5 mm) but there is some overlap between individuals of both species as presented in Table 7. Like other representatives of the *tullbergi* complex, the specimens of the Nimba *P. rostratus* do not harbour any marked fronto-parietal crests. The rostrum is long, the brain case wide and round. The infraorbital foramen stops just at the level of the t4 of the M1. The tympanic bullae are small and round. On the upper molars, the t2 and t3 cusps are not completely aligned transversally, the t1 is not isolated. There is the presence of a small t9. The upper M3 is small and when unworn displays three main cusps. On the lower molars, one can see a cv5 on the M/1 and a posterior cingulum. The lower M/3 is small but displays two rows of cups.

Praomys tullbergi (Thomas, 1894)

Mus tullbergi Thomas, 1894: 205.

Remarks

The holotype was described in 1892 under the name *Mus burtoni* by Thomas from Ankober [=Ankobra] River, Wasa, Ashantee, Gold Coast region and in 1894 was renamed to *Mus tullbergi* because the name *burtoni* was preoccupied by another species (Thomas 1892, 1894). Heim de Balsac & Lamotte (1958) described two morphs of *Praomys* that they attributed to *P. jacksoni* and *P. morio.* A large form with a long hindfoot that could fit with *P. rostratus* and a smaller one that could represent *P. tullbergi*. Coe (1975) recorded 94 specimens attributed to *P. tullbergi* and Misonne & Verschuren (1976) also recovered more than 100 specimens from the Liberian side of Mount Nimba indicating that they represent a single homogeneous series and named them as *P. tullbergi*. Gautun *et al.* (1986) indicated that both species coexist on the Guinean side of Mount Nimba. The Cyt b barcoding has allowed us to attribute old collection specimens to *P. tullbergi* which confirms previous works.

P. tullbergi is very similar in external morphology to *P. rostratus* in having also a rufous-brown dorsal pelage, a white belly and a tail length longer than HB one (mean: 121,8%; range: 105-136%) (Table 7). The hindfeet are on average smaller in *P. tullbergi* than in *P. rostratus* (21.3 versus 24.5 mm), although there is some overlap here (Table 7). The skull does not display any visible fronto-parietal crest, the nasal is long and relatively narrow in front. The braincase is oval. On the ventral side the infraorbital foramen is long and enters between the molar rows until the prelobe of the upper M1/. The tympanic bullae are round and small (Table 8). The molars of the specimens identified by molecular sequencing as *P. tullbergi* (MNHN-ZM-2011-594) are quite similar to those of *P. rostratus.* The cusps of the upper M1/ prelobe are less individualized than in *P. rostratus* but the difference is subtle.

Praomys sp.

Remarks

32 specimens from the 2011 Liberia expedition were collected but not sequenced and released with their HF measured. Their hindfoot measurements (Min: 22.7 mm; Max: 27.1 mm) indicated the probable presence of the two species in Tailings 1, 4, 7, Bentor 1, ENNR16. The specimens collected by Gautun are preserved as skin and skull at MNHN (MNHN-ZM-MO-1997-1544 to 1561) and they display hindfoot lengths between 23 and 28 mm, they were found in Ziela and Nimba, with no further precisions. They probably belong either to *P. rostratus* or *P. tullbergi*.

Genus *Hylomyscus* Thomas, 1926
(Tables 7; 8)

Remarks

These small semi-arboreal rodents are well represented at Mount Nimba with 16 new individuals captured in the secondary forest of Serengbara and the gallery forest of Gouan on the Guinean side of the mountain, and 11 on the Liberian side (excluding 25 specimens released during Mission 2). These specimens have a short dense soft pelage of brown-yellow colour. A recent revision of the West and Central African *Hylomyscus* allowed Nicolas *et al.* (2020) to confirm that the Mount Nimba specimens are true *H. simus* (G. M. Allen & Coolidge, 1930) whose holotype was described from Merikay, 'interior of Liberia' with no more specific locality.

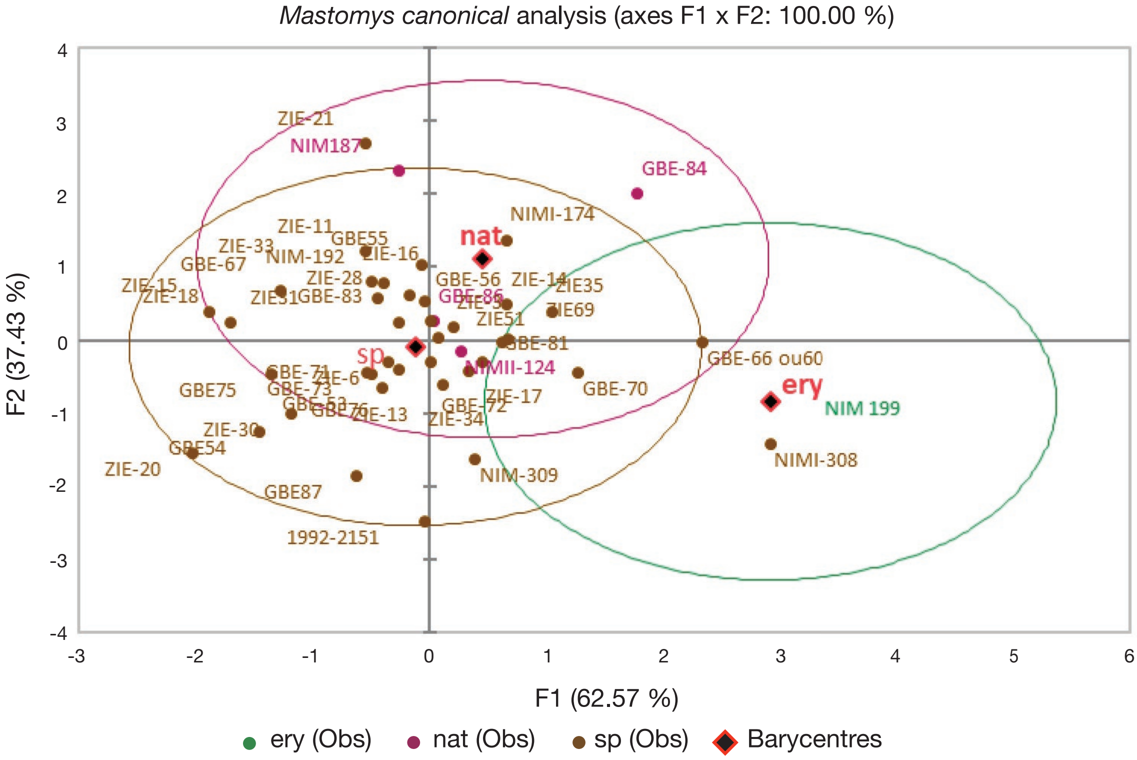

FIG. 10. — Canonical analysis on skull distances for genetically typed *Mastomys erythroleucus* (Temminck, 1853), *M. natalensis* (Smith, 1834) and indeterminate ones; **ery**, erythroleucus; **nat**, natalensis; **sp.**, indeterminate species (see Appendices 1, 2, 3 for MNHN specimens voucher numbers).

Hylomyscus simus G. M. Allen & Coolidge, 1930

Hylomyscus alleni simus G. M. Allen & Coolidge, 1930: 599.

Hylomyscus simus – Rosevear 1969: 454.

REMARKS

Specimens MNHN-ZM-2021-1833 to 1836 (SER173, 163, 172, 186, 191) were molecularly analysed by Nicolas *et al.* (2020). Moreover, they were karyotyped in the field and their karyotypes were homogeneously determined as 2N = 48, NFa = 70 formula (Appendix 4).

This small rodent has a tail longer than head and body (about 140-165% of HB) and a relatively long hindfoot (15-19 mm). It has generally a brown dense short dorsal pelage and a white-grey belly. Hands and feet are pale yellow-white like the tail (Table 7). The Nimba *H. simus* displays a small and narrow skull without marked fronto-parietal crests. The rostrum is narrow and short. The braincase width does not exceed the width of the zygomatic arches which lends a rectangular shape to the back of the skull. The incisors are orthodont. In ventral view, the incisive foramina end just before the upper M1 roots, the palate is narrow, the molar rows are parallel, the tympanic bullae are small and flat and the foramen magnum is quite large. The mandibles are short and the region of the apophyses high. Skull measurements are provided in Table 8. The molar rows are small and preserve the usual Praomyini bunodont cusp pattern with small t3 poorly differentiated from the t2, a small M3/3 and relatively narrow palate at the t4 level. On some upper M1 there is the presence of a longitudinal crest on the t4 and on the M2/ on the t6. On the M2/ the t9 is small or absent. The upper M3 harbours 4 cusps in two laminae with a strong round t1. On the lower molars the prelobe is related to the first lamina by a small median longitudinal crest. Cusps are slightly compressed labio-lingually and do not alternate. There is a posterior cingulum visible on m12 and accessory cusps visible on the m12. The m3 shows three cusps in two laminae.

Genus *Mastomys* Thomas, 1915
(Fig. 10; Tables 7; 8)

REMARKS

Two species of *Mastomys* are known to occur in forest clearings and Guinean savannas of Guinea (Lalis *et al.* 2009): *M. natalensis* (Smith, 1834) and *M. erythroleucus* (Temminck, 1853). These two species are difficult to distinguish morphologically as shown by Denys *et al.* (2012) and Lalis *et al.* (2009), but present distinct cytogenetic characters and molecular typing allow their discrimination. Gautun *et al.* (1986) signalized the capture of two *M. erythroleucus* in Zouguepo and numerous records of potentially two forms of *Mastomys* were collected by Heim de Balsac & Lamotte (1958), Coe (1975) and Misonne & Verschuren (1976). We karyotyped two specimens and sequenced 12 others, which has allowed us to recognize the presence of both species in our new material. A canonical analysis performed upon 10 skull measurements shows a large variability and overlap between the species representatives (Fig. 10). The specific identification of the Lamotte collection is difficult without genetic markers but concerning our non-genetically typed specimens from villages in the Ziela region they all fit within the *M. natalensis* variability. Concerning the MNHN Lamotte collections, identifications at species level are doubtful even with the use of morphometric data, so we retain these old specimens as *Mastomys* sp.

Mastomys erythroleucus (Temminck, 1853)

Mus erythroleucus Temminck, 1853: 160.

Remarks

The specimen MNHN-ZM-2021-1770 (NIM199) displayed the typical standard karyotype of *M. erythroleucus* (Volobouev *et al.* 2001; Denys *et al.* 2009) with 2N = 38. The three new specimens collected in Mission 1 were barcoded.

Mastomys erythroleucus displays a great variability in the pelage coloration and external characters are not always diagnostic so we do not detail more external morphology. The Nimba *Mastomys erythroleucus* have similar dimensions as their homologues from forest Guinea. Their tail length is slightly smaller than HB. This character is also found in the holotype (Table 7). The new Nimba specimens display well marked CIO, long nasal, no fronto parietal crests and a relatively square braincase. In ventral view, the long incisor foramen enters between the molar rows in the palate and one can observe small tympanic bullae. For skull distances, one can find that *M. erythroleucus* is characterized by a narrower rostrum than in *M. natalensis* and by a larger lower molars length (Table 8). As already detailed (Denys & Winkler 2015) there are few dental differences between species of *Mastomys* of West Africa. Molar characteristics of the Nimba *M. erythroleucus* fit well with those highlighted in Denys & Winkler (2015): bunodont murine cusp pattern, T1 posterior to t2-t3, T1 and t3 on upper M2 and t1 on M3, 2 lobes on the M3/3. The lower molar row is slightly longer in *M. erythroleucus* and cingular cusps are more numerous. The upper M3/ is slightly larger in *M. erythroleucus* (Table 8).

Mastomys natalensis (Smith, 1834)

Mus natalensis A. Smith, 1834: 156.

Remarks

Mastomys natalensis is very common in anthropogenic habitats of the forested Guinea (Lalis *et al.* 2009, 2012). Its was reported by Misonne & Verschuren (1976) in Liberia but they did not collect them. Heim de Balsac & Lamotte (1958) also report it from all Nimba localities but we found this species only on the Guinean side of Mount Nimba.

The specimens display the same body size and tail proportion as the other Guinean specimens (Table 7). They are slightly smaller than *M. erythroleucus*. *Mastomys natalensis* specimens are slightly smaller than *M. erythroleucus*, and their molar rows are also on average smaller than those of *M. erythroleucus* (Table 8). Representatives of this species display very similar morphology compared to *M. erythroleucus*, except that *M. natalensis* has smaller molar rows and the upper M3/3 with a single cusp (instead of two) on the posterior lobe of the upper M3/.

Mastomys sp.

Remarks

There is a high morphological variability in the old collections from Nimba. However, most of the non-typed specimens fit well with *M. natalensis* as shown on the DFA on skull measurements (Fig. 10). The specimens found within houses in Ziela, Foromota and Glabouyouma villages are generally young individuals and look smaller than specimens found in open sites and probably fit with *M. natalensis* which is more commensal in forested zones of Guinea than *M. erythroleucus* (Denys *et al.* 2009; Lalis *et al.* 2012). Coe (1975) collected eight specimens he attributed to *M. erythroleucus* at 500 m altitude, seven were found in cassava and rice farms and one in secondary forest. Gautun *et al.* (1986) collected two specimens attributed to *M. erythroleucus* on Zougepo plateau. Misonne & Verschuren (1976) listed 18 specimens attributed to *M.* cf. *erythroleucus* from Gbapa, Yekepa and Nimba base in cultivated fields, secondary bushes and savannas, and abandoned villages.

Genus *Mus* Linnaeus, 1758
(Tables 7; 8)

Remarks

Several authors pointed to the important diversity of *Mus* spp. in Guinea and Côte d'Ivoire (Rosevear 1969; Kan Kouassi *et al.* 2008). Heim de Balsac & Lamotte (1958) and Coe (1975) recorded two species, *M. setulosus* Peters, 1876 and *M. musculoides* Smith, 1834, on the Guinean and Liberian sides of Mount Nimba. Gautun *et al.* (1986) did not collected these species while Misonne & Verschuren (1976) were able to catch only one species, which they referred to as *M. minutoides* Smith, 1834. During our survey we collected many specimens of this genus and have karyotyped five individuals which yielded two distinct chromosomal formulae. First, we obtained karyotypes of *Mus setulosus* (2 N = 36, NFa = 34) and then of *M. minutoides* (2 N = 34, NFa = 32). The CytB sequencing of 23 specimens confirmed the presence of both species on Mount Nimba but added one species: *M. baoulei* Vermeiren & Verheyen, 1980. Unfortunately, no karyotypes were done for this species of which we found only one individual. *Mus baoulei* was already recorded in eastern Guinea by Kan Kouassi *et al.*

(2008) in Sudanian savanna. Coe (1975) collected small mice he attributed to *M. musculoides* without further details. Because *M. minutoides* and *M. musculoides* are sibling species, they may both occur at Nimba but are basically impossible to distinguish on morphological and morphometrical grounds. Hence, we were unable to identify some specimens to species level.

Mus minutoides Smith, 1834

Mus minutoides Smith, 1834: 157.

Remarks

The karyotype of the specimens MNHN-ZM-2022-934 (GBIE-215) and MNHN-ZM-2022-935 (GBIE-230) (2 N = 34, NFa = 32) is similar to those of other specimens of the same species collected in north-west and south-west Guinea (Kan Kouassi *et al.* 2008) (Appendix 4).

This small mouse is characterized by a tail length shorter than HB and a relatively brown dorsal pelage and a white belly. Our newly collected specimens are smaller than previously collected ones in other parts of Guinea and Côte d'Ivoire. The genetically typed specimens from Guinean and Liberian Nimba display some size differences, especially the HB length and ear length are larger in Liberia (Table 7). *Mus minutoides* is characterized by a small skull size as well as small molar rows and a tiny laminated M3/3 (Table 8).

Mus setulosus Peters, 1876

Mus (*Nannomys*) *setulosus* Peters, 1876: 480.

Remarks

The karyotypes of two specimens displayed the standard karyotype for this species (2N = 36, NFa = 34), the Cyt B sequencing allowed to attribute these specimens to *M. setulosus*. This karyotype is similar to the one of a *M. setulosus* from Sangassou (forest Guinea) (Kan Kouassi *et al.* 2008). The tail length is shorter than HB length. The dorsal pelage is grey light brown and the belly white. There is a line of yellow-light brown hairs at the demarcation between the dorsal and ventral parts. The tail is short and unicolored. This species is characterized by being larger than *M. baoulei* and *M. minutoides* (Tables 7; 8). The skull displays a short and wide rostrum, a large CIO and a rounded braincase. In ventral view, the incisive foramina are large and enter into the palate before the first lobe of the M1/. The tympanic bullae are small and oval. *Mus setulosus* skulls display similar sizes on both sides of Mount Nimba. Their respective values of skull distances fit well with previous work for Guinean and Ivorian specimens molecularly typed by Kan Kouassi *et al.* (2008). *Mus setulosus* has a longer toothrow compared to *M. baoulei* and *M. minutoides* and the m3 has two lobes as opposed to one in the other species. The prelobe of the upper M1 is large and not elongated.

Mus baoulei (Vermeiren & Verheyen, 1980)

Leggada baoulei Vermeiren & Verheyen, 1980: 573.

Remarks

The species was recently described and genetically validated by Kan Kouassi *et al.* (2008) and Bryja *et al.* (2014). Our single Nimba individual was validated with a blast (Cyt B, reference sequence PX354162). The species is characterized by a small size, a very short tail (66% of HB) and the presence of ochre spots below each eye and below each ear. The dorsal pelage is rufous-brown and the ventral pelage white. The tail is bicolored. Its standard external measurements fit well with the other genetically typed specimens of Guinea and Côte d'Ivoire (Table 7). The skull in dorsal view has a relatively long and narrow rostrum. The CIO is wide and the braincase rounded and inflated. The skull displays in ventral view a very long incisor foramen entering in the palate until the t4 of the upper M1/. The incisive foramina are narrower anteriorly. The tympanic bullae are small and rounded. Our new specimen fits well in size with skull measurements of the Côte d'Ivoire and Guinean *M. baoulei* specimens. The molars rows are relatively long and intermediate in size between those of *M. setulosus* and *M. minutoides* (Table 8). The upper M3/3 are very small and reduced to a single lamina.

Genus *Rattus* Fischer, 1803
(Table 7)

Rattus rattus (Linnaeus, 1758)

Mus rattus Linnaeus, 1758: 61.

Rattus rattus – Fischer 1803: 128.

Remarks

This commensal rodent was recorded in Guinean Nimba as early as 1958 (Heim de Balsac & Lamotte). There are four specimens from Bossou, Zouguépo, and Nion. Misonne & Verschuren (1976) reported 15 individuals found in new Camp, Grassfield, Yekepa inside houses. Coe (1975) found it abundant in and around houses all over the Nimba area.

All recently collected specimens are juveniles whose skull, skin and dentition fit well with *R. rattus* found elsewhere in Africa (Table 7). The skull is robust with well marked fronto-parietal crests and short and wide nasals. In ventral view the molar rows are parallel and the incisive foramina relatively long ending at the posterior level of the first M1/ root. The tympanic bullae are round and short.

Family Deomyinae Thomas, 1888

Remarks

This Muridae subfamily is represented in the Nimba range by two genera: *Lophuromys* Peters, 1874 and *Uranomys* Dollman, 1909.

Genus *Uranomys* Dollman, 1909
(Tables 7; 8)

Remarks

This monospecific genus has a wide disjunct distribution across tropical African savannas (Monadjem *et al.* 2015) and can be locally abundant. In West Africa it has been recorded from Côte d'Ivoire, Ghana, Guinea, and Sierra Leone (Grubb *et al.*1998).

Uranomys ruddi Dollman, 1909

Uranomys ruddi Dollman 1909: 552.

Remarks

The type specimen came from Mount Elgon (Uganda) but no significant morphological differences were detected to support the presence of a higher diversity in the genus despite some chromosomal variability. The species was reported by Heim de Balsac & Lamotte (1958) on the Guinean side of Mount Nimba with two individuals from Ziela and seven specimens from Gouécké. In 1961 Pierre Aguesse collected an additional individual. Since that time no new specimens have been collected by Gautun *et al.* (1986), Misonne & Verschuren (1976), or Coe (1975). We were unable to trap new specimens during our fieldworks.

The Nimba specimens display a grey-brown dense and short dorsal pelage and grey-white belly, not spiny, with a naked short tail. The specimen MNHN-ZM-1981-1123 fits the size range of the Côte d'Ivoire specimens (Table 7). On the ventral part of the skull the palate bone extends above the mesopterygoid fossa as in *Acomys* I. Geoffroy, 1838. Proodont incisors, a large interorbital constriction, a rounded braincase, and a short nasal rostrum are typical of the species morphology. On ventral view the incisive foramina extend in the palate between the t1 cusps of M1. The dental rows are parallel and the tympanic bullae are oblique, oval and small. Skull measurements are provided in Table 8 and the Mount Nimba *Uranomys* fit well within the variability of other Guinean and Côte d'Ivoire representatives. As in other Deomyinae the *U. ruddi* molars are constituted by rows of cusps similar to the murinae pattern, with a t1 and a t4 on the upper M1. This subfamily differs from the Murinae by the cusp disposition on the upper M3 with the absence of t1 and presence of t3 and by the very oblique pattern of cusps on this tooth. In one specimen (MNHN-ZM-1981-1123), the whole labial row of cups (t3, t6, t9) is not well distinguished and not separated by a deep valley from the central row of cusps. On the lower molars, cingular cusps are abundant on both lingual and labial sides of m1.

Genus *Lophuromys* Peters, 1874
(Tables 7; 8)

Remarks

Only one species of *Lophuromys* is known to occur in West Africa: *L. sikapusi* (Temminck, 1853) initially described from the Gold Coast (Ghana). On Mount Nimba, the species is generally collected in abundance in various environments from savanna to forest both on the Guinean (Heim de Balsac & Lamotte 1958; Gautun *et al.* 1986) and Liberian sides (Coe 1975; Misonne & Verschuren 1976). Because Gautun *et al.* (1986) indicated some differences between specimens collected at 1600 m with a karyotype of 2N = 64, NFa = 76 and specimens collected in Côte d'Ivoire with a karyotype of 2N = 60, nF = 76-70 (Matthey 1958), we paid some attention to morphological and genetical variability of the specimens recovered during our survey.

Lophuromys sikapusi (Temminck, 1853)

Mus sikapusi Temminck, 1853: 160.

Lasiomys afer Peters, 1866: 409.

Lophuromys afer – Peters 1874: 234.

Lophuromys sikapusi – Allen 1939: 395.

Remarks

Most of the *Lophuromys* captured display the typical red brown pelage, small size, and short tail, which characterizes the *sikapusi* complex, but some specimens collected at 1600 m altitude in the Mare d'hivernage showed a slightly darker pelage than specimens living at lower altitudes. Such colour variability was also noticed by Roche (1971) for the Seredou (Guinea) *Lophuromys* series. Three females and six males from three localities and two altitudes (600 and 1200 m) yielded the same karyotype of 2 N = 66, NFa = 76, which differs from known *L. sikapusi* of Côte d'Ivoire (2 N = 60, 64; NF = 70-76, Matthey 1958; Gautun *et al.* 1986). Previous work in western Guinea indicated that *L. sikapusi* was characterized by a 2N = 66, NFa = 74 (Denys *et al.* 2009). Some molecular analyses (Missoup 2010, pers comm.) confirm that all the Nimba specimens belong to the *L. sikapusi* clade, but also that a high genetic variability with at least two subclades is present on Mount Nimba. This robust rat harbors short legs, a short tail and short ears and the tail is uniformely naked and black. All newly collected specimens from Guinean and Liberian Nimba fit well in size and proportions with those previously collected despite a wide variability (Table 7).

The skull of *Lophuromys* is relatively large and somewhat triangular in outline. The nasal bone is long and narrow, the IOC very large with sometimes visible bumps. The zygomatic arches are close to the skull and low. The braincase is wide and long. The incisors are either orthodont or proodont. In ventral view the incisive foramina are long and wide and stop between the dental rows at the level of the upper M1 t4 cusp. The dental rows are parallel, and the palate is short ending in between the upper M3. The pterygoid fossae are long and narrow, the tympanic bullae are small, the mastoid part of the bullae is slightly inflated. The mandible is low and long and displays a large variability in size. The lower incisors are long and poorly curved. There is a large size variability but both newly collected specimens from Guinea and Liberia display same range of measurements with slightly smaller mean values in the Guinean populations (Table 8). On the molars, the cusps are high and rounded. On the upper M1, the t1 is relatively well individualized and posterior to the t2-t3. The t3 is not well individualized and its posterior border is oblique with a little crest. Discrete stephanodont crests are visible on some upper molars as well as some supplementary cingular cusplets. The M3 is small and reduced to two more or less oblique laminae of cusps. On the lower molar rows, the prelobe is fused to the first chevron by a longitudinal crest and the two cusps of the prelobe are separated by a small valley where in some cases a tmA develops. There is a large posterior cingulum on m1-2 and a small antero-labial cusp on m2. The m3 is small with two rows of cusps. An important variability of the cusp disposition and of the size of molar rows is observed in the Nimba populations.

Family NESOMYIDAE Major, 1897
Subfamily CRICETOMYINAE Roberts, 1951

Genus *Cricetomys* Waterhouse, 1840
(Table 9)

REMARKS

The giant pouched rats are relatively abundant in West Africa where they are often associated with anthropogenic habitats. Their taxonomy has been debated for long and a molecular analysis showed that the *C. emini* (Wroughton, 1910) complex is composed of at least four allopatric clades that should be elevated to species rank (Olayemi *et al.* 2012). According to these authors *C. gambianus* Waterhouse, 1840 would be restricted to West African savannas and is also present in Guinea. On Mount Nimba, Lamotte & Heim de Balsac (1958) initially signalized the existence of *C. gambianus liberiae* Osgood, 1910. Coe (1975) also signalized the presence of *C. gambianus* as well as Misonne & Verschuren (1976). Gautun *et al.* (1986) found *C. emini* in forest of the Zouguepo plateau and Roche (1971) reported *C. emini* from Seredou (forested Guinea). Mamba *et al.* (2021) found both species in the same locality of Mount Ziama (Guinea). Bene *et al.* (2013) listed both species as being sold as bushmeat on the Nimba town markets. In the Guinean side of the mount, 111 specimens belonging to *Cricetomys* spp. were captured by hunters in 2004-2005 (Dufour 2006).

Cricetomys* cf. *emini (Wroughton, 1910)

Cricetomys gambianus emini Wroughton, 1910: 269.

REMARKS

Olayemi *et al.* (2012) showed that the western clade of *C. emini* s.l. is clearly distinct from the eastern clade, hence we refer to specimens from Mount Nimba as *Cricetomys* cf. *emini*. A few specimens attributed to this species have been collected mostly in the forests at lower altitudes (Heim de Balsac & Lamotte 1958; Gautun *et al.* 1986). We did not collect any new specimens but two individuals were observed in TMF during Mission 2, of the western Nimba survey in Liberia.

The skins of the two specimens of *C.* cf. *emini* (MNHN-ZM-MO-1987-139 and 1991-2261) display a harsh pale-yellow pelage and are poorly preserved with no standard external measurements preserved. In fact, *C.* cf. *emini* is distinguished from *C. gambanius* on the basis of its short pelage and well contrasted dorso-ventral pelage. According to Genest-Villard (1967), both species can be discriminated by using a skull ratio. Here our Nimba specimens harbour a bizygomatic/GTL ratio lower than 45.5 that corresponds to *C.* cf. *emini s.l.* (Table 9). The skull is large and narrow, with fronto parietal crests well visible. The incisor foramina are short as well as the tympanic bullae. There are no clear molar morphological differences between *C. emini* and *C. gambianus* from molar cusps morphology. The upper molars display bunodont cusps with a well isolated, round t4. Cusps are relatively well aligned, and one can observe small longitudinal connections between rows of cusps. On the upper M2-3 one can see a t3 and no t1. The M3/3 are large and are about same size (slightly larger) as the M2. Many cingular cusplets are visible on the lower molars with a well-marked posterior cingulum.

Cricetomys gambianus Waterhouse, 1840

Cricetomys gambianus Waterhouse, 1840: 2.

Cricetomys gambiensis Temminck, 1853: 168.

REMARKS

The species was reported by Heim de Balsac & Lamotte (1958) on a Mount Nimba crest between 1550 and 1750 m. Coe (1975) found one individual at 500 m in the secondary forest and one specimen at 1300 m at the edge of the *Parinari* forest. Misonne & Verschuren (1976) collected three specimens in New Camp and Iti on the Liberian side of Mount Nimba that they attributed *to C. gambianus* in ombrophylous forest. We collected one specimen in an *Hevea* plantation at around 500 m during Mission 3 on the Liberian side of the Mount. Camera traps allowed to vizualize some individuals in lowland forest in Liberia in 2017 (Appendix 8).

Coe (1975) indicated the external measurements for seven *Cricetomys gambianus* which he collected on the Liberian side of the Nimba. Unfortunately these specimens are not housed in the NHM and could not be examined (P. Jenckins pers. comm). We only have the external measurements available (Table 9). The specimen MNHN-ZM-MO-1981-558 from Mount Nimba has no skin available and its broken skull is very damaged (left [premaxillary + maxillary + M1, two broken mandibles, left with m2 and right with m12]) and none of the skull distance measurements could be taken. It is relatively difficult here to confirm whether the Lamotte's specimen fits well within *C. gambianus* or not. Our new specimen is smaller than Coe's specimens (Table 9). Because Coe (1975) and Misonne & Verschuren (1976) were aware of the revision of Genest-Villard (1967) we can confirm the coexistence of both species in Mount Nimba.

TABLE 9. — External standard measurements of the Guinean and Liberian Nimba Nesomyidae specimens from new and old MNHN collections or after Coe (1975): **N**, number of individual measurements, **Mean**, average value; **Min-Max**, Minimum and Maximum value; **W**, weight; **HB**, head and body length, **Total length**: HB + TL; **TL**, tail length; **HF**, hindfeet; **E**, ear length.

Taxon	Specimen	N	W	Total Length	HB	TL	HF	E
Cricetomys gambianus Waterhouse, 1840	MNHN-LB105	1	883	–	329	314	60	36
Cricetomys gambianus	NHM	7	579-1419	634-809		358-400	61-72	35-43
Dendromus lachaisei Denys & Aniskine 2012	MNHN Mission 1 Mean	14	9	–	69.6	89.6	17.1	11.93
	Min-Max	–	5-12	–	58-78	79-96	15-19	10-13

TABLE 10. — Nimba Nesomyidae Major, 1897 skull measurements in mm. For abbreviation of skull measurements, see material and methods.

Taxon	Specimen	N	LTC	WZYG	CIO	LNAS	WNAS	WOCC	FO	FOPAL	M13S	LBT	LMDB	HMDB	M13I	WZYG. LTC
C. cf. *emini*	MNHN-ZM-MO-1987-139	1	74.2	31.51	10.07	29.69	10.57	22.7	7.34	25.93	11.16	8.12	50.57	22.5	10.81	42.47
C. cf. *emini*	MNHN-ZM-MO-1991-2261	1	72.73	30.85	10.24	28.74	10.88	23.43	5.77	25.41	10.55	7.23	50.15	23.66	10.15	42.4
D. lachaisei	MNHN Mission 1															
	Mean	13	20.75	40.61	3.1	7.14	2.61	9.2	–	–	3.21	3.94	12.1	5.35	2.82	–
	Min-Max		18.6-22.1	10.1-11.2	2.9-3.3	6.6-7.8	2.5-2.9	8.5-9.8	–	–	3.1-3.3	3.2-5.1	11-12.8	4.4-6	2.5-3.2	–
	MNHN Lamotte	2	20.6-19.6	9.6	3.2-3.1	7.3	2.4	8.7-8.4	–	–	3.1-3.2	3.8-3.7	11.5	5.3-4.4	3.2-3.1	–

Subfamily DENDROMURINAE Allen, 1939

Genus *Dendromus* Smith, 1829
(Tables 9; 10)

REMARKS

The species from Mount Nimba *D. lachaisei* Denys & Aniskine, 2012 was recorded both during the dry and wet season from Serengbara (600 m), Gouan (1 200 m) and in Mare d'hivernage (1 600 m). Karyotype and the morphological variability were described by Denys & Aniskine (2012) and the chromosome formula is 2N = 30, aFN = 56. The molecular analysis confirmed the phylogenetic affinities of the Mount Nimba specimens with other West African forms of clade 3, and its close affinities with *D. kumasi* Bohmann, 1939 from Ghana and its position within the subgenus *Dendromus* A. Smith, 1829 (Voelker *et al.* 2021). A total of 15 specimens were recovered in 2008 and 10 specimens collected by Heim de Balsac & Lamotte (1958) from Nion crest and Ziela previously attributed to *D.* cf. *melanotis* A. Smith, 1834 have been included under this species name. Only one specimen was recorded by Misonne & Verschuren (1976) on the liberian side at Grassfield.

Dendromus lachaisei Denys & Aniskine 2012

Dendromus lachaisei Denys & Aniskine, 2012: 297.

REMARKS

The main description was provided in Denys & Aniskine (2012); we recall here the main characteristics of the species. This small rodent has a rufous brown dorsal pelage without a distinct dorsal stripe (sometimes an inconspicuous one is present), a pure white belly, and a long prehensile tail. On the hindfoot, digit 1 is reduced and digit 5 is long and semi-opposable with a claw. The standard external measurements are provided in Table 9. The skull is characterized by a long and narrow rostrum, a well marked interorbital constriction and a round inflated braincase. In ventral view the incisor foramina are long and wide and entering into the palate at the level of the t4 of the upper M1/. The tympanic bullae are large and slightly inflated. The skull measurements are provided in Table 10. The molars, like in all other *Dendromus*, are characterized by the absence of t1 on M1/, a small M3/3 and some stephanodont crests linking alternate cusps.

Family GLIRIDAE Muirhead, 1819

REMARKS

Representatives of various Gliridae were found both in our new samples and in old MNHN collections. External and skull measurements are provided in Tables 11; 12.

Genus *Graphiurus* Smuts, 1832

REMARKS

Heim de Balsac & Lamotte (1958) collected three different species: *G. hueti* Roquebrune 1883, *G. spurelli* Dollman, 1912 and *G. crassicaudatus* (Jentink, 1888). Different revisions of the genus have shown that *G. spurelli* is a synonym of *G. lorraineus* Dollman, 1910 and is present on Mount Nimba (Holden 2005). *Graphiurus hueti* has been put in synonymy with *G. nagtglasii* Jentink, 1888 and was described from Liberia. *Graphiurus lorraineus* is relatively common through the whole West and Central Africa and is characterized by a

Table 11. — External Standard measurements of Gliridae Muirhead, 1819, Sciuridae Fischer de Waldheim, 1817, Anomaluridae Gervais, 1849 specimens from Mount Nimba. Same abbreviations as Table 9. Symbol: *, measurements on dry skin.

Taxon	Specimen	N	W	HB	Total Length	TL	HF	E
Gliridae								
G. natglasii	MNHN-ZM-MO-1967-1418	1	–	160	–	102	28.5	20
G. natglasii	MNHN-ZM-MO-1970-236	1	–	100	–	90+	27	17
G. natglasii	MNHN-ZM-MO-1970-545	1	–	108	–	65+	27	18
G. natglasii	NHM Min-Max	5	28-76	–	190-237	89-94	22-26	14-21
G. lorraineus	MNHN-ZM-2021-1698	1	18	86	–	69	12	12
G. lorraineus	MNHN-ZM-2021-1699	1	20	91	–	66	17	13
G. lorraineus	MNHN-ZM-2021-1697	1	21	96	–	71	17	17
G. lorraineus	MNHN-ZM-1986-104	1	–	87	–	95	17	12
G. lorraineus	NHM	2	18-23	–	142-180	40-90	16-19	11-12
G. lorraineus	DM12752	1	–	–	–	–	17	–
Sciuridae								
F. p. leonis	NHM	1	209	196	–	177	45	18
P. poensis	MNHN-ZM-2001-1275	1	–	–	148	165	40+	14
P. poensis	NHM Min-Max	4	102-136	159-163	208-217	–	34-36	9-15
H. punctatus	MNHN-ZM-MO-1983-92	1	–	–	97	122	35	9
H. punctatus	MNHN-ZM-MO-1983-93	1	–	–	100	–	30	9
H. punctatus	NHM Min-Max	3	356-413	–	300-337	229	55-57	14-21
H. rufobrachium	MNHN-ZM-MO-1986-93*	1	–	310	250+20	–	–	–
A. aubinii	NHM	1	542	228	–	346	60	20
A. aubinii	NMK 306	1	–	237	–	273	54.5	19.5
P. stangeri	NHM Min-Max	3	388-737	257-293	357-386	63-67	20-24	–
E. e. jonesi	NHM	1	368	219	357	67	22	–
E. erythropus	MNHN-ZM-MO-1992-116	1	7	–	–	–	60	24
	NHM	2	260-265	204	–	230.5	63.5	18
Anomaluridae								
A. derbianus	NHM	1	111	–	387	198	44	32
A. beecrofti	NHM	1	389	–	274	197	46	28
I. macrotis	NMK540	1	28	–	89.5	131.5	19.7	16.7

uniform grey pelage color. *Graphiurus natglasii* and *G. crassicaudatus* are larger in size and do not correspond to our newly collected specimens. The genus is in urgent need of revision.

Misonne & Verschuren (1976) and Coe (1975) indicated the presence of two species on the Liberian side of the mountain with *G. hueti* (identified as *G. natglasii*) and *G. lorraineus*. Mamba *et al.* (2021) recorded also the same two species on Mount Ziama. We collected a few new specimens of these rodents and examined the old Lamotte collection.

Graphiurus crassicaudatus (Jentink, 1888)

Claviglis crassicaudatus Jentink, 1888: 41.

Remarks

Two specimens (MNHN-ZM-MO-1992-112, MNHN-ZM-MO-1992-111) are attributed to *G. crassicaudatus* but none of these has a complete skull or are adult. This species is characterized by a medium size (GLS > 24 mm and < 32mm) (Monadjem *et al.* 2015), a rufous pelage, and proodont upper incisors. The nasal bone of this species is narrow and does not extend onto the intermaxillary bone and molar rows are larger than in other Gliridae species. Neither Gautun *et al.* (1986) nor Coe (1975) recovered it on Mount Nimba. Grubb *et al.* (1998) indicated its presence in Togo and Ghana, while the holotype came from the Du Queah river in Liberia. According to Heim de Balsac & Lamotte (1958), the juvenile specimen attributed to this species is distinguished from *G. lorraineus* by a very wide interorbital constriction and braincase, and more rounded zygomatic arches. According to these authors this specimen fits well with *G. crassicaudatus* described from Bouroukerou (Côte d'Ivoire). Specimen MNHN-ZM-MO-1992-112 has a very broken skull, nasals are not preserved but the four molars are erupted. The CIO corresponds to the average values of *G. lorraineus* but the upper and lower teeth rows are larger (Table 12). The specimen MNHN-ZM-MO-1992-111 is also a juvenile whose upper molars are not all erupted; its incisors are orthodont and the nasal is not extended and narrow. Its CIO corresponds to *G. murinus* other specimens and the skull is smaller than in other specimens but the lower molar row is larger.

Graphiurus nagtglasii Jentink, 1888

Graphiurus nagtglasii Jentink, 1888: 38.

Remarks

Two specimens in a bad state of preservation were recovered from Lamotte's MNHN collections and compared with one specimen from Seredou (Guinea). Morphometrically, the Nimba specimens fit well with the variability present in this species and with Coe's (1975) specimens (Table 11). They display a brown grey dorsal and ventral pelage. The skull is massive with a squarish braincase. The tympanic bullae are large and inflated in the mastoid region. The nasal bone is narrow and its suture with the premaxillary bone rectilinear. The incisors are opisthodont (Table 12).

Graphiurus lorraineus Dollman, 1910

Graphiurus lorraineus Dollman, 1910: 285.

REMARKS
In the MNHN we found five specimens attributed to *G. spurelli murinus* that fit well with our new specimens from the Guinean and Liberian sides of the mount. In the NMK collection specimens attributed to *Graphiurus* sp. (NMK 514, 515, 561) were attributed to *G. lorraineus* by one of us (AM). This small glirid is uniformly grey-brown and displays a relatively long and hairy tail. Its hindfeet are small. The tail color matches the dorsal pelage and reaches 72 to 80% of HB length in the newly collected specimens but this character appears highly variable. The belly is grey-white. There is no facial mask and no post-auricular patchs. The hindfoot is white. The external standard measurements are given in Table 11 and fit within the species variability. The skull is small with a poorly marked CIO, a short and broad rostrum and a relatively square braincase. The nasal is not straight and it curves downwards onto the side of the snout. There is no fronto-parietal crest. In ventral view the incisive foramina are short. The molars are small and the palate ends just after M3/. The tympanic bullae are elongated with traces of septae and are inflated in their middle. The incisors are orange and orthodont. The mandible is low. Skull measurements are provided in Table 12 and fit well with the old Lamotte collection values for Nimba, Seredou and Côte d'Ivoire. Like all Graphiurinae there are four small cheek teeth with laminated lophs and squarish morphology with no further diagnostic features and they are not figured here.

Family SCIURIDAE Fischer, 1817

REMARKS
Sciurids are not generally captured by Sherman or pitfall traps, so we could only here provide old collections records and visual field observations. In West and Central Africa, this family is highly diversified into seven genera (Monadjem *et al.* 2015).

Subfamily SCIURINAE Baird, 1857

Genus *Funisciurus* Trouessart, 1880

REMARKS
This genus is present in forests and Guinean woodlands across West and Central Africa. No new specimens were recovered during our recent surveys. In West Africa potentially three species of the genus are recognized: *F. pyrrhopus* F. Cuvier, 1833 whose type was described from Gabon, *F. substriatus* de Winton, 1899 from Ghana, and *F. anerythrus* found in SW Benin (Monadjem *et al.* 2015).

Funisciurus pyrrhopus (F. Cuvier, 1833)

Sciurus pyrrhopus Cuvier, 1833: figure; 1842: 240.

REMARKS
This species is characterized by the presence of a white stripe on its flanks. Coe (1975) found two specimens of *F. pyrrhopus* that he observed commonly on the Guinean side of the mountain. Misonne & Verschuren (1976) did not report the species. Two subspecies were described from that region: *F. pyrrhopus leucostigma* Temminck, 1853 from Ghana and *F. pyrrhopus leonis* Thomas, 1905 from Sierra Leone. In a revison of *Funisciurus*, Rosevear (1964) mentioned that *F. pyrrhopus* is the largest representative of the genus but he could not find skull diagnostic characters, only pelage patterns. Later, Rosevear (1969) provided some skull characters but synonymized all known subspecies. According to Monadjem *et al.* (2015), *F. anerythrus* and *F. pyrrhopus* can be distinguished by the coloration of the face and limbs.

A skin from Nimba (MNHN-ZM-MO-1986-90) displays a black dorsal pelage framed by two white-yellow unbroken stripes, while the limbs are reddish-brown like in other *F. pyrrhopus* specimens. Similarly six specimens from NMK (9, 33, 222, 253, 257, 339) display this characteristic pattern. The belly is yellow-white and the tail black and long with few white tips above, medially rufous below. The species is quite rare in collections. No skull from Mount Nimba could be examined; only a skin without measurements. We recovered one individual with camera traps (Appendix 7C). Five specimens were captured by hunters in Gbakoré and Seringbara in 2004-2005 (Dufour 2006).

Genus *Paraxerus* Forsyth Major, 1893 (Table 11)

Subgenus *Aethosciurus* Thomas, 1916 (Table 11)

REMARKS
A single species of *Aethosciurus* occurs in West Africa: *P. A. poensis* A. Smith, 1830. Two specimens were captured by M. Lamotte on Mount Nimba (MNHN-ZM-1987-135 and MNHN-ZM-2001-1275). Misonne & Verschuren (1976) found two specimens in Liberia and Coe (1975) found four individuals. Six specimens were recorded in NMK (NMK 96, 254, 263, 285, 290, 337). No new specimens were collected during our surveys but in 2017 one specimen was caught by a camera-trap on the Liberian side (Appendix 7B).

TABLE 12. — Nimba Gliridae Fischer, 1817, Sciuridae Fischer de Waldheim, 1817 skull measurements in mm. For skull abbreviation measurements see Material and methods. Specimens refered as **MO-** belong to MNHN old collections.

Taxon	Specimen	N	LTC	WZYG	CIO	LNAS	WNAS	WOCC	UTR	LBT	LMDB	HMDB	LTR
Graphiuridae													
G. crassicaudatus	MO-1992-112	1	–	–	4.5	–	–	–	3.6	–	15.2	6.8	3.53
G. crassicaudatus	MO-1992-111	1	18.2	–	4.4	5.25	1.9	10.7	–	5.7	11.8	4.6	3.71
G. natglasii	MO-1970-236 & MO-1967-1418	2	30-37.7	15.08-22	5.4-5.9	10.26-13.71	4.0-4.6	14.2-15.7	4.4-5	7.8-9.4	17.8-23.7	7.3-11.1	4.21-4.92
G. natglasii	MO-1970-545	1	–	18	5.6	11.64	4.2	14.8	4.4	7.2	20.5	7.8	4.72
G. lorraineus	MNHN Mission 1												
	Mean	3	23.9	13.6	4.6	8.29	3.4	12.2	2.9	7.11	14.3	6.3	2.57
	Min-Max		23-25	12.9-14.6	4.4-4.9	7.6-8.8	3.2-3.6	11.7-12.6	2.6-3.05	6.1-8.1	13.8-14.7	5.5-7	2.1-2.8
G. lorraineus	MNHN Lamotte	2	25.6-26.9	13.7-15.3	4.6-4.7	9.2-9.9	3.5-3.6	12.1-12.3	3.2-3.7	6.5-7.2	15.6	7-7.1	2.9-3.1
G. lorraineus	DM12752	1	22.4	12.5	–	–	–	–	2.7	–	13	–	3.21
Sciuridae													
H. rufobrachium	MO-1987-133	1	54.9	31	16.4	16.5	8.5	22.8	10.3	12.2	36	19.3	9.5
A. aubinii	MRAC-RG35764	1	54.7	31	16.9	15.8	8.6	24.1	10.35	11	37.9	20.6	10.2
A. aubinii	NHM65-762 & 46.415	2	56.4-56.7	31.1-32.6	17.1-17.9	15.8-17	8.6-9	23.7-24.5	19.3-20.2	11.3-11.5	38.9-39.3	20.1-21.8	11.1-11.5
P. stangeri	MO-1987-132	1	–	–	23.1	17.9	11.8	–	12	–	49.2	27.9	12
E. erythropus	MO-1992-115	1	62.5	31.76	15.2	20.97	8.21	22.65	11.31	13.66	41.72	–	12.2
E. erythropus	MO-1992-114	1	60.86	31.3	15.47	19.9	8.17	22.75	11.94	14.21	36.42	17.07	13

Paraxerus* (*Aethosciurus*) *poensis (A. Smith, 1830)

Sciurus poensis A. Smith, 1830: 128.

REMARKS
This squirrel does not display any flank stripe and is uniformly colored in a dark brown-grey pelage. It is a rather small squirrel with no rufous marks on its limbs. The Nimba specimen had no external measurements but fits in size with the Seredou specimens described by Roche (1971). The HF is between 36 and 40 mm long in Nimba. The tail, which is longer than HB, does not display any colored rings and has the same color as the dorsal pelage. The terminal tuft is small (around 4 cm long) and sparsely haired. The ventral pelage is ochraceous yellow-grey. The size variability of the species is not well known (Table 11). The incisors are orange and orthodont. The skull is small to medium in size and its proportions fit well with the described specimens, with a GLS <40 mm and the presence of a P3/ at the upper tooth row. We were unable to measure the Nimba specimens, whose skulls were all broken. The bullae display a slight trace of a transbular septum but according to Moore (1959) there may be 1 to 2 septa visible in the genus.

Genus *Heliosciurus* Trouessart, 1880
(Tables 11; 12)

REMARKS
The so-called sun squirrels of the genus *Heliosciurus* are distributed throughout all tropical Africa and represented by six species among which three occur in West Africa (Monadjem *et al.* 2015): *H. gambianus* (Ogilby, 1835), *H. punctatus* (Temminck, 1853) and *H. rufobrachium* (Waterhouse, 1842). The three species are known to occur on Mount Nimba and in the surrounding regions. The species *H. punctatus* was previously synonymised with *gambianus*, but it has recently been rehabilitated. We have found both species in the NHM collections obtained from Mount Nimba.

Heliosciurus gambianus (Ogilby, 1835)

Sciurus gambianus Ogilby, 1835: 103.

REMARKS
Heliosciurus gambianus is distinguished from the two other West African species by a light grey-brown ventral pelage as opposed to *H. punctatus* which has a dark ventral pelage and from *H. rufobrachium* which displays brown red-ventral pelage especially under forearms and hindlegs. *Heliosciurus punctatus* was described in Mount Nimba as a subspecies of *H. gambianus* by Misonne & Verschuren (1976) and Coe (1975) who reported its presence from the Liberian side of the mountain. In the MNHN collections we recovered some specimens attributed to *H. gambianus* and others to *H. punctatus* that allow to conclude that both species occur on Mount Nimba.

The specimens attributed to *H. gambianus* (MNHN-ZM-1986-91, 1986-93 and 1983-94) display a light grey dorsal pelage and the belly is light brown-yellow not contrasting with the dorsal pelage speckled with white and brown hair. The tail is long and harbors some black ridges and a black tip; the feet are white. This morphology fits well with Rosevear's (1969) and Monadjem *et al.*'s (2015) descriptions of *H. gambianus*. No external measurements were provided with the Nimba specimens. No skull was found associated with the Nimba specimens so we could not document their morphology and size. According to Monadjem *et al.* (2015), the GLS of the skull is between 42.5 and 51.6 mm, with an average of 47.4 mm.

Heliosciurus punctatus (Temminck, 1853)

Sciurus punctatus Temminck, 1853: 138.

Remarks

The Nimba specimen MNHN-ZM-MO-1983-92 is a juvenile that has short red-brown hair speckled with black and white above. The belly is light grey. The tail is long with a terminal long black tuft and is unicolored in its anterior part and some brown spots arranged in rings become more visible in the posterior part. This specimen is similar to the specimen *H. punctatus* MNHN-ZM-MO-1970-520 from Seredou (Roche 1971). The Nimba specimen measurements are relatively small compared to the Coe's (1975) specimens probably because they are juveniles (Tables 11; 12). According to Monadjem *et al.* (2015) the GLS skull is between 41.3 and 48 mm with an average of 45 mm. Some variability is observed between the specimens belonging to this species. There is an urgent need for a taxonomic revision.

Heliosciurus rufobrachium (Waterhouse, 1842)

Sciurus rufobrachium Waterhouse, 1842: 202.

Remarks

We did not collected any new specimen of *H. rufobrachium* during our survey but Monadjem took pictures of this species in West Nimba (Appendix 7). Heim de Balsac collected three specimens (MNHN) from the Nimba massif on the Côte d'Ivoire side with no specific locality. Misonne & Verschuren (1976) collected only one specimen in Liberia. In NMK, three specimens were found but only two with museum numbers: NMK 326 and 378. The species is also known under the subspecies name *H. rufobrachium maculatus* (Temminck, 1853) from Seredou (Ziama massif, Guinea) (Roche 1971). Two specimens were found hunted in Serengbara in 2004-2005 (Dufour 2006).

The Nimba *H. rufobrachium* is characterized, compared to *H. punctatus*, by bright red or reddish-brown limbs contrasting with the dark brown dorsal pelage. The dorsal hairs are speckled with white and yellow. The head is of the same color as the dorsal part. The tail is longer than HB and has black dorsal hairs speckled with white-yellow and a very small terminal tuft (Appendix 7). The external measurements are provided in Table 11. As in the other *Heliosciurus* species, the skull is of medium size and has well marked post orbital processes. The nasals are short and domed The incisors are orange and proodont. There are small incisive foramina and a marked masseteric tubercle. The P3 is small and the tympanic bullae are homogeneously curved and do not harbour signs of transbular septa externally. The skull dimensions of the Nimba specimen fit well within the variability observed for the species in Seredou and in the NHM specimens (Table 12) and with the redescription of the species by Thomas *et al.* (2019).

Genus *Allosciurus* Conisbee, 1953
(Tables 11; 12)

Remarks

This genus is endemic to West African Guinean forests. It is monospecific and was considered as a distinct genus from *Protoxerus* by Thomas (1909), Rosevear (1969) and Grubb *et al.* (1998) based on its skull and pelage differences. However, this was not accepted by Thorington *et al.* (2012) nor by Koprowski *et al.* (2016) without any new phylogenetical analyses. Grubb (2013) and Monadjem *et al.* (2015) considering the numerous morphological differences of the specimens attributed to this species retained it in the genus *Allosciurus*.

Allosciurus aubinii (Gray, 1873)

Sciurus aubinii Gray, 1873: 65.

Remarks

This endemic species is known only from the Upper Guinea forests of West Africa occurring in Guinea, Côte d'Ivoire, Liberia and Ghana (Monadjem *et al.* 2015). It was recorded only by Coe (1975) from the Liberian side of Nimba (NHM 46.415) and further three specimens are recorded in NMK (NMK 306, 385, and 437).

The pelage was described by Rosevear (1969) as dense, silky fine and uniform dark brown finely ticked with grey or yellow hairs. The underside is paler and greener. The tail is black above and paler at the tip and it is longer than HB. The weight is between 429 and 498 g (average: 470.7 g) (Table 11). The skull is large and heavily domed in the rostrum and parieto-occipital region. The incisors are orange and the postorbital process forms a deep notch at the back of the interorbital constriction region. The molar rows are small and there is a P3/. The tympanic bullae are round and marks of transbullar septae are not visible. There is no masseteric tubercle visible The skull measurements are provided in Table 12.

Genus *Protoxerus* Forsyth Major, 1893
(Tables 11; 12)

Remarks

This largest African squirrel occurs in rainforest from Sierra Leone to Kenya. It is an arboreal species. In a molecular phylogeny of the Sciuridae, *Protoxerus* is sister to a clade including *Paraxerus* and *Funisciurus* (Steppan *et al.* 2004), however, neither *Allosciurus* nor *Epixerus* were included in that phylogeny. One species is recognized in the genus, which requires further taxonomic revision.

Protoxerus stangeri (Waterhouse, 1842)

Sciurus stangeri Waterhouse, 1842: 202.

Remarks

Lamotte (1966) collected one specimen of this giant squirrel on the Guinean side of the mountain (MNHN-ZM-MO-1987-132) and Roche (1971) mentioned the species from Seredou. It was not reported by Misonne & Verschuren (1976) from the Liberian side but Coe (1975) collected three specimens attributed to *P. stangeri temmincki* Anderson, 1879. Five specimens are recorded in the NMK (NMK336, 383, 392, 451, and 490). The species was identified as bushmeat sold in Yekepa and Saniquellie markets by Bene *et al.* (2013). One individual was caught by a camera-trap in 2017 on the Liberian Nimba in lowland forest (Appendix 7). In the Guinean side of the Mount, 20 specimens were captured by hunters in Gbakoré, Zouguépo and Séringbara (Dufour 2006).

The giant squirrel is characterized by a dark brown dorsal pelage, speckled with black and white hairs, and a relatively small tail with black rings and a brown tuft of hairs. There is no lateral stripe. The standard external measurements are provided in Table 11. The skull is large with a short nasal not domed and the post orbital notch situated in the anterior part of the CIO. In ventral view there is no P3 and only four jugal teeth. The molar rows are quite large and a masseteric knob is present. The tympanic bullae are long and in a single curvature with no trace of transbullae septa. The skull measurements are provided in Table 12.

Genus *Epixerus* Thomas, 1909
(Table 11)

Remarks

This monospecific genus occurs in Upper Guinea rainforest of West and Central Africa (Monadjem *et al.* 2015). This is a ground squirrel that is recorded in Liberia, Sierra Leone and extreme South Guinea (Grubb *et al.* 1998, Koprowski *et al.* 2016). Hayman (1954) described the species *E. jonesi* from Sierra Leone but in a comprehensive revision of the genus, Kuhn (1964) concluded to its synonymy with *E. ebii*. Following Koprowski *et al.* (2016) we assigned the Mount Nimba specimens to *E. ebii jonesi*.

Epixerus ebii jonesi Hayman, 1954

Epixerus ebii jonesi Hayman, 1954: 16.

Remarks

This squirrel was not found in our recent surveys nor by Misonne & Verschuren (1976). Coe (1975) describes a single specimen of *Epixerus ebii* Temminck, 1853 that he attributed to the *jonesi* subspecies but the specimen cannot be found in the NHM collections (P. Jenkins pers. comm.). However, four specimens of *E. ebii* from Nimba are housed in NMK (NMK348, 432, 448, 462).

It is a large squirrel with rich orange-brown colored dorsal pelage and forelimbs. The tail is slightly longer than HB and has a black and white color.

Subfamily Xerinae Murray, 1866

Genus *Euxerus* Thomas, 1909
(Tables 11; 12)

Remarks

The species initially described as *Sciurus erythropus* E. Geoffroy Saint-Hilaire, 1803 was placed into *Euxerus* Thomas, 1909 by Rosevear (1969). Various revisions then placed *Euxerus* as a subgenus of *Xerus* until recent rehabilitation by Krystufek *et al.* (2016) following molecular analyses. The genus is abundant and easily observed both on the Guinean and Liberian slopes of Mount Nimba. We did not captured any specimens in our recent surveys but Lamotte and collaborators found it on the Guinean Mount Nimba and in Ziela. Coe (1975) reported the common presence of the species, which he named *E. erythropus maestus* Thomas, 1910. *Euxerus e. maestus* holotype comes from Daru in Sierra Leone. Rosevear (1969) indicated that *Euxerus e. microdon* Thomas, 1905 which was described from Kitui, Kenya, is distributed in Guinean woodlands from Senegal to Kenya. But, in the absence of revision of this species we cannot assign our Nimba specimens either to *E. e. maestus* or to *E. e. microdon*. Roche (1971) also recorded the subspecies *E. e. maestus* from Seredou (Guinea) and Misonne & Verschuren (1976) collected a single male from the basis of Liberian Nimba. At NMK one can find one specimen from Nimba (NMK 434). On the Guinean side, *E. erythropus* was seen on the Gouan camp road at 1200 m on 28 February 2008 in the morning, in the gallery forest/Protea Savannah ecotone. Coe (1975) indicated this squirrel to be present along track sides, farms and in grassland outliers and this author suggested the species benefited from anthropogenic activities and that it is not a true forest-dwelling species. Misonne & Verschuren (1976) observed it regularly on the road between Yekepa and Grassfield. During the Liberian surveys A. M. recorded sightings at TMF, and ENNR regularly around Yekepa, especially in the farming communities. In 2022 it was observed between Gbarpa and Camp4 by A. M. According to Bene *et al.* (2013) this species was found regularly sold as bushmeat in the markets and restaurants of Yekepa and Saniquellie. The species was found hunted in Gbakoré, Séringbara and Zouguépo on the Guinean side of the Mount (Dufour 2006).

The pelage of this squirrel is coarse and brittle with brown dorsal color. Two white lateral stripes are well visible. The belly and throat are white. The limbs are a pale fawn above. The ears are bare with very short pale buff hairs and a small white patch below the eyes. The tail length is shorter than HB and the hairs are long, black and white and there is no terminal tuft. The standard external measurements are provided in Table 11. The skull is long and narrow compared to other West African squirrels. The rostrum is relatively long and not domed. The postorbital process is small and situated at the back of the interorbital constriction and there is a small notch in the supraorbital crest. The incisors are orange and opistodonth. In ventral view one can see a strong masseteric knob, a tiny P3/ and a relatively large upper tooth row. The tympanic bullae are large and inflated, the palate extends behind the molar rows (see also Herron & Watermann 2004). The skull dimensions are provided in Table 12.

Family ANOMALURIDAE Gill, 1872

Genus *Anomalurus* Waterhouse, 1843

Anomalurus Waterhouse, 1843: 124.

Subgenus *Anomalurops* Matschie, 1914 (Table 11)

Anomalurops Matschie, 1914: 351.

REMARKS

In West Africa two species of the genus are encountered. They are arboreal and found in lowland and montane forests. At Mount Nimba, two species were collected during past fieldwork on the Liberian side. No new specimens were found or seen and no old collections from the Guinean Nimba were available, but the genus is known from Seredou (Roche 1971).

Anomalurus derbianus (Gray, 1842)

Pteromys derbianus Gray, 1842: 262.

REMARKS

No record of this species was obtained by Lamotte and collaborators on the Guinean side of the mountain. However, it was collected by Coe (1975) and Misonne & Verschuren (1976) on the Liberian side.

Anomalurus derbianus is a medium sized scaly-tailed flying squirrel which displays a grey more or less silvery dorsal pelage that fits well with the description of the *A. derbianus* holotype (Appendix 7). Coe (1975) also described the specimens from Liberian Mount Nimba as pale uniform olive grey above and pale grey below. Another characteristic of this species concerns the length of the tail, which is shorter than HB (Rosevear 1969). The specimen collected by Coe (1975) was small compared to other literature data (Table 11). According to Rosevear (1969), anomalurid skulls are very homogeneous and only size can allow to distinguish between the species. For *A. derbianus* the GLS is over 50 mm. The skull is robust with a very wide triangular shape and bizygomatic width, a large CIO and a short nasal. There is a marked postorbital process situated at the back of the supraorbital ridge. The incisors are yellow and orthodont, the molar rows bear five jugal teeth (P3 to M3) and the palate is not extended past M3/. The tympanic bullae are long and slender and slightly inflated. The species displays high-crowned flat molars with roots hardly visible and a pentalophodont pattern.

Anomalurus beecrofti Fraser, 1852

Anomalurus beecrofti Fraser, 1852: 17.

Anomalurops beecrofti – Rosevear 1969: 160.

REMARKS

This slightly smaller species was collected by Coe (1975) and Misonne & Verschuren (1976) on the Liberian side of the Mount. We were unable to find any specimen in the MNHN Lamotte's collection. Two specimens are preserved in NMK (NMK393 and NMK110: Appendix 7). Roche (1971) reported a single individual from Seredou (Guinea).

This species is characterized by a large variability of color and fur pattern (Rosevear 1969; Schunke & Hutterer 2005). It can be distinguished from *A. derbianus* by a tail that does not end in a black terminal brush and there may be some orange color in the ventral pelage (Monadjem *et al.* 2015). We could not find any collection specimen with an intact skull. The GLS of the two NMK specimens were 56.0 and 52.3 mm.

Genus *Idiurus* Matschie, 1894 (Table 11)

Idiurus macrotis Miller, 1898

Idiurus macrotis Miller, 1898: 15.

REMARKS

The long-eared scaly-tailed flying squirrel was not captured during our recent surveys but was collected by Coe (1975) in Liberia and Forbes-Watson (unpublished) confirmed their presence in Grassfield (Liberia) and collected nine specimens. In NMK we examined four specimens (NMK540, 393, 539, and 560) (Appendix 7). It was neither recorded by Lamotte and collaborators nor by Roche (1971) in Seredou (Guinea). More recent records in the region were accidentally captured with bat nets in 2010 in the Putu Mountains of Liberia and in 2009 at Gola Rainforest National Park in Sierra Leone (Decher & Weber 2015). The size and shape variability of this rare rodent was studied by Schunke & Hutterer (2007) who demonstrated that only *I. macrotis* is present in West Africa. In West Africa, the species occurs in Sierra Leone, Liberia, Ghana, and Nigeria, then in Cameroon, Equatorial Guinea and Gabon, and disjunct in eastern Democratic Republic of Congo and northern Tanzania (Schunke & Hutterer 2007).

Idiurus macrotis is characterized by a relative small size and the presence of a flight membrane between limbs and enclosing the tail. The tail is longer than HB, with long hair ending in a tuft of sparse and not very dense long hairs. The dorsal pelage is pale grey-brown and there is no color difference to the ventral side. The GLS of the skull in West Africa is between 24.8 and 26.8 mm (Table 11).

Family Thryonomyidae Fitzinger, 1867

Genus *Thryonomys* Fitzinger, 1867

Thryonomys swinderianus (Temminck, 1827)

Aulacodus swinderianus Temminck, 1827: 248.

Remarks

A damaged skull (MNHN-ZM-2021-1807) and a mandible with juvenile molars (MNHN-ZM-2021-1806) were collected in the grassland of the Mare d'hivernage at 1655 m and some living animals of this genus were observed on various occasions. The only species of cane-rat recorded in West Africa is *T. swinderianus*, which is very common in all moist grasslands and swamps. This rodent was neither reported from Mount Nimba by Gautun *et al.* (1986), nor by Coe (1975). Misonne & Verschuren (1976) did not collect it, but indicated characteristic tracks and runways in altitude savanna at Mount Richard Molard and in Duleyela. In the Guinean side of the Mount, 70 individuals of *T. swinderianus* were captured by hunters in 2004-2005 (Dufour 2006).

We assign the two specimens to the species *T. swinderianus* because the other species, *T. gregorianus*, does not occur in West Africa (Monadjem *et al.* 2015).

The broken skull MNHN-ZM-1807 shows a large orange striated incisor with three grooves. The specimen had been burnt (human consumption? or seasonal fire?). It is a juvenile because only two molars are visible in the upper maxillae. The mandible MNHN-ZM-2021-1806 displays only three molars and no DP/4. The skull MNHN-ZM-MO-1987-128 from Lamotte's collection also displays naso-frontal suture rectilinear and the trilophodont molars, the dental morphology typical of *T. swinderianus*.

Family Hystricidae G. Fischer, 1817

Remarks

In sub-Saharan Africa two genera are recorded: *Hystrix* Linnaeus, 1758 and *Atherurus* Cuvier, 1829. *Atherurus* is considered a forest inhabitant while *Hystrix* is more a savanna species. Both genera are found on Mount Nimba but are rarely seen. They are both highly appreciated bushmeat and are sold in the markets and restaurants in Yekepa, Saniquellie and other Guinean villages (Dufour 2006; Bene *et al.* 2013).

Genus *Atherurus* Cuvier, 1829

Atherurus africanus (Gray, 1842)

Atherura Africana Gray, 1842: 261.

Remarks

The brush-tailed porcupine is hunted for bushmeat trade and regularly seen in local markets. Coe (1975) mentioned one specimen from the Liberian side and and another was found in NMK (NMK568). Misonne & Verschuren (1976) also recorded some specimens in forest and in Cassava fields at Grassfield. During our Liberian survey we collected porcupine spines in the cave of *Picathartes* on 29 Feb. 08 close to a gallery forest at 807 m (07°41'40.8"N, 08°23'21.6"W) which probably belonged to *A. africanus* and many individuals were observed in camera-traps in 2017 (Appendix 8).

Genus *Hystrix* Linnaeus, 1758

Hystrix cristata Linnaeus, 1758

Hystrix cristata Linnaeus, 1758: 56.

Remarks

Misonne & Verschuren (1976) reported this species presence on the basis of spines collected in small caves near Grassfield on the Liberian side of the mountain. We were unable to detect any signs of this species during our surveys. Grubb *et al.* (1998) reported the presence of *Hystrix* in Ghana, Sierra Leone and the Gambia where it was found in woodland and savanna habitats. This species was not mentioned as bushmeat by Bene *et al.* (2013) but Dufour (2006) mentioned the capture of one individual in Zouguépo.

DISCUSSION

Trapping success

By using live-traps like Shermann and pitfall traps we were able to collect numerous small rodents. In Nimba, our TS were quite low except during Mission 2. It is difficult to compare our results with other expeditions, but we had a relatively high trapping success, from 2.87 to 11% (Table 4) compared with the 2.4% of Gautun *et al.* (1986), or the 2.7% of Coe (1975) for all environments. Also, Coe (1975) reported some damage to trapped rodents caused by ants and shrews that we also experienced in a few specimens. In Guinean forests near Macenta, using Sherman traps and the same bait and team, Denys *et al.* (2004) achieved 16% trap success in a sacred forest and 2.7% in surrounding cultivated fields. In coastal forest and cultivated zones of Guinea, Denys *et al.* (2009) obtained a TS of 9.5%.

Total species diversity

Our taxonomic revision of the old MNHN and NMK collections and the use of genetic analyses of the modern specimens allowed us to update the total faunal list of Mount Nimba for the Guinean and Liberian side. Unfortunately, the Ivorian side of the mountain has not yet been explored properly. During our respective field surveys in Guinean and Liberian Nimba, we collected 22 rodent species with voucher specimens to which we can add sightings of three additional species and five species verified by camera-trapping. Using only Sherman, small Tomahawk and pitfall traps we approach the totals of Heim de Balsac & Lamotte (1958) and Coe (1975) who collected 28 and 27 species, respectively (Table 5). In total, after revision of the taxonomic attributions of the old collections, the number of rodent species recorded from Mount Nimba is 43, which is high for an area of this size (674 km^2).

By looking at the habitats for the Muridae, Nesomyidae, Gliridae and Thryonomyidae rodents only, it appears that the edaphic savanna at low and high elevations supported nine genera (*Gerbilliscus*, *Arvicanthis*, *Dasymys*, *Grammomys*, *Lemniscomys*, *Mylomys*, *Cricetomys*, *Dendromus*, *Thryonomys*). Forest-type habitats (primary, secondary and gallery) shared the presence of six genera (*Typomys*, *Dephomys*, *Malacomys*, *Praomys*, *Hylomyscus*, *Lophuromys*) and five genera were ubiquitous (*Oenomys*, *Mus*, *Rattus*, *Graphiurus*, *Mastomys*). The higher species richness in closed environment was related to the co-existence of two species recognized for *Typomys* (*T. planifrons*, *T. trivirgatus*), *Dephomys* (*D.* cf *eburneae*, *D. defua*), and *Malacomys* (*M. cansdalei*, *M. edwardsi*) (Table 5).

The new genetic analysis methods allow us to improve the knowledge of the more cryptic murid diversity, like for the two sympatric species in *Praomys*, *Dephomys*, *Malacomys*, and *Typomys*, as well as the probable coexistence of both *Cricetomys* species, which were also recovered in sympatry at Ziama (Mamba *et al.* 2021). To previous lists we add here for the first time the presence of *Malacomys cansdalei*, *M. natalensis* and *Mus baoulei*. There are no clear explanations for this high diversity among Guineo-Congolian forest environments, but past climatic changes and the role of ecotone habitats in speciation have been discussed in several recent papers (Missoup 2010; Bohoussou *et al.* 2015; Nicolas *et al.* 2020; Mamba *et al.* 2021). Moreover, the topography of Mount Nimba with steep slopes and the presence of numerous edaphic savannas inside forests and mountane forests increases the ecotone transitions which are maintaining high diversity (Schilthuizen 2000).

Compared with other West African mountains and sites which have been explored recently the Nimba rodent diversity is higher than at Ziama (Guinea) and Wologizi National Park (Mamba *et al.* 2021), Mount Loma (Heim de Balsac 1971), or Pic de Fon (Simandou range; Decher 2004). At Wologizi NP, Mamba *et al.* (2021) collected nine rodent species and 13 species at Ziama. The latter auhors found several species in common with Nimba and the sympatric occurrence of *C. emini* and *C. gambianus*. They also recovered a new species, *Colomys wologizi* Mamba *et al.* 2021 whose presence was known at Wonezigi in Liberia in the past, but had not been captured since 1990 (Giarla *et al.* 2021). This species has not yet been recorded at Mount Nimba, but due to the proximity to the Wologizi range and the similarity in habitats, it would be worth searching for it here. The presence of semi-aquatic *C. wologizi* adds another urgency to preserve the Upper Guinean rainforests in West Africa. In Mount Loma, eight murid species were recorded including a mixture of savanna species (e.g., *L. striatus*, *M. erythroleucus*, *G. kempii*) and forest species (*O. ornatus*, *P. tullbergi*, *P. rostratus*, *M. setulosus*) and *L. sikapusi* (found in both habitats up to 1600 m a.s.l.) (Heim de Balsac 1971). At Pic de Fon (Simandou range), Decher (2004) recorded 16 species among which the savanna species *U. ruddi*, *M. dybowskii*, *and P. daltoni* were recovered for the first time in that region whose presence in Nimba was confirmed only in the 1960s. In Simandou no forest taxa such as *Dephomys*, or *Colomys* were recorded, but Decher (pers. comm) have captured *M. edwardsi*, *G. macmillani*, *T. planifrons* and *G. lorraineus* in forested west side of Simandou during 2 EIAs in 2008 (Decher *et al.* unpublished). which confirms the high diversity of the forests in the North of the Nimba range.

Specific diversity and habitats

In our study, the most abundant rodents in primary and secondary forest environments were *Praomys tullbergi* and *P. rostratus*, *Hylomyscus simus* and *Lophuromys sikapusi*, species classified as ubiquitous by Misonne & Verschuren (1976). We confirmed that these four rodents are found in various forest types including *Parinari* mountain forest both on the Guinean and Liberian side of Mount Nimba. Gautun *et al.* (1986) found the Ziela forest dominated by *Praomys*, *Malacomys* and *Typomys*, and the Mifergui Plateau dominated by *Praomys*, *Hylomyscus* and *Cricetomys*. Misonne & Verschuren (1976) found that *Typomys*, *Hylomyscus*, *Malacomys* and *Dephomys* are associated with dense forest, and with the exception of *Hylomyscus*, disappear with the forest destruction. We recorded these four genera, which are represented by West African endemic species in both primary and secondary forest. This highlights the necessity of preserving the integrity of forests at Mount Nimba. We must also not forget the larger rodents that are known to contribute to forest regeneration like *C. gambianus*, the Sciuridae and Anomaluridae through their partially frugivorous diets (Misonne & Verschuren 1976; Happold 2013). Furthermore, these rodents are under considerable hunting pressure (Dufour 2006; Bene *et al.* 2013).

According to Misonne & Verschuren (1976), *Mastomys* and *Dasymys* were associated with open habitat such as cultivated fields, and were not recorded in closed environments. Here, we confirm that *M. erythroleucus* was found in edaphic savannas and *M. natalensis* in houses only, as highlighted by Lalis *et al.* (2009) in Guinean forests. Concerning *Dasymys*, we did not collect it in cultivated fields but only in *Loudetia* savanna, which is similar to what Coe (1975) found when capturing it only in Liberian grasslands. *Dasymys* was very abundant in Seredou (Roche 1971) but more recent studies in cultivated zones of Guinea did not recover it in abundance (Denys *et al.* 2005, 2009).

Some savannas species easily captured by traps like *Arvicanthis* cf. *rufinus*, *Uranomys ruddi*, *Oenomys ornatus* or *Mylomys dybowskii* were confirmed by the examination of old collection specimens but have not been collected since the pioneer work of Heim de Balsac & Lamotte (1958) on Nimba. Like Misonne & Verschuren (1976) we also collected *L. striatus* and *M. minutoides* in edaphic savanna plus *G. macmillani*. *Oenomys ornatus* was also recovered from Mount Loma by Heim de Balsac (1971). *Mylomys dybowskii*, *U. ruddi* and *P. daltoni* were collected in 2008

Table 13. — Biogeographical affinities of rodents from the Guinean highland localities.

	Nimba This study	Ziama. Wolegizi Mamba *et al.* (2021)	Loma Heim de Balsac (1971)	Pic de Fon, Simandou (2008)
Strict endemic species				
West African endemic species	–	*Colomys* Thomas & Wroughton, 1907 sp.	–	–
	Dendromus lachaisei	–	–	–
	Hylomyscus simus	*H. simus*	–	*H. simus*
	Praomys rostratus	–	–	*P. rostratus*
	Typomys planifrons	–	–	*T. planifrons*
	Typomys trivirgatus	*T. trivirgatus*	–	–
	Praomys rostratus	–	–	–
	Oenomys ornatus	–	*O. ornatus*	–
	Dephomys defua	*D. defua*	–	–
	Dephomys eburneae	–	–	–
	Malacomys cansdalei	–	–	–
	Malacomys edwardsi	*M. edwardsi*	–	–
	Mus baoulei	–	–	–
	Graphiurus natglasii	*G. natglasii*	–	–
	Allosciurus aubinii	–	–	*A. aubinnii*
Guineo-Congolian forest species	*Lophuromys sikapusi*	*L. sikapusi*	*L. sikapusi*	*L. sikapusi*
	Praomys tullbergi	–	*P. tullbergi*	–
	Mus setulosus	*M. setulosus*	*M. setulosus*	*M. setulosus*
	Graphiurus crassicaudatus	–	–	–
	Graphiurus lorraineus	*G. lorraineus*	–	*G. lorraineus*
	Epixerus ebii	–	–	–
	Funisciurus pyrrhopus	–	–	–
	Heliosciurus rufobrachium	–	–	–
	Paraxerus poensis	–	–	–
	Protoxerus stangeri	–	–	*& NMK393*
	Atherurus africanus	–	–	*A. africanus*
	Anomalurus beecrofti	–	–	–
	Idiurus macrotis	–	–	–
	Cricetomys emini	*C. emini*	–	*C. emini*
Guinean and Sudanian savannas species	*Dasymys rufulus*	–	–	–
	Arvicanthis rufinus	–	–	*P. daltoni*
	Mus baoulei	–	–	–
	Mylomys dybowskii	–	–	*M. dybowskii*
	Cricetomys gambianus	*C. gambianus*	–	–
	Gerbilliscus kempii	–	*G. kempii*	*G. kempii*
	Grammomys macmillani	–	–	*G. macmillani*
Widespread in Africa	*Uranomys ruddi*	–	–	*U. ruddi*
	Mastomys natalensis	–	–	–
	Mastomys erythroleucus	*M. erythroleucus*	*M. erythroleucus*	*M. erythroleucus*
	Mus minutoides	–	–	*M. minutoides-musculoides*
	Lemniscomys striatus	–	*L. striatus*	*L. striatus*
	Heliosciurus gambianus	–	–	–
	Euxerus erythropus	–	–	–
	Hystrix cristata	–	–	–
	Thryonomys swinderianus	–	–	–
	Anomalurus derbianus	*A. derbianus*	–	–

at Pic de Fon (Simandou) in the same ecoregion, but they all are savanna species. Some other species found in the old collections like *T. gracilis* or *L. macculus bellieri* could not be confirmed due to the bad state of preservation of the specimens. Some of the rare species like *Allosciurus aubinii*, *Epixerus ebii* or *G. crassicaudatus* have only been collected a handful of times in the past, and we could not verify the specific identities of these old specimens. *Idiurus* was observed only once by Coe (1975) and collected by Forbes-Watson (pers. comm.).

Distribution of rodent species per altitude

As was the case with bats and shrews (Denys *et al.* 2021; Monadjem *et al.* 2016), the rodent species were not uniformly distributed across the different habitats and along altitudinal vegetation zones. Because during the 2008 mission we could sample rodents at the same sites both in the dry and wet seasons, we can provide a broad picture of the species general distributions through habitats and elevations for the Guinean side of the Mount and using our collections plus the voucher labels and literature for the Liberian side (Fig. 11).

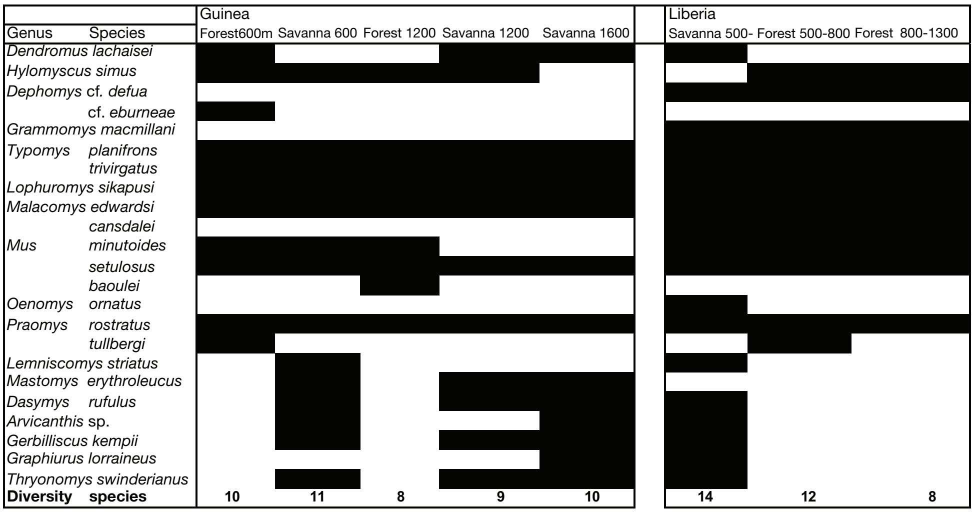

Fig. 11. — Rodent species (excluding Sciuridae and Anomaluridae) diversity of the collected specimens in the Guinean and Liberian sides of the Mount per habitat and altitude including some data from the literature and indications on old voucher specimens. We focus here only upon trappable animals using Shermans and pitfalls at the exception of *T. swinderianus* (Temminck, 1827).

There is no clear elevational zonation on Mount Nimba for rodents but some taxa may be restricted to the lowland and mountain forest below 1300 m a.s.l. like *Dephomys* cf. *eburneae*, *M. edwardsi*, *T. trivirgatus* and *P. tullbergi*. *L. striatus* was recorded only in lowland savannas (Fig. 11).

The highest diversity seems to be reached in edaphic savanna at 500-600 m both on the Guinean and Liberian sides of the mountain. Especially the Grassfield locality, which was explored during many expeditions, yielded both grassland species but also bush and forest species across the ecotone. The most diverse habitat was lowland forest for shrews followed by edaphic savanna at 600 m (Denys *et al.* 2021). Some taxa like *D. lachaisei*, *H. simus*, *M. setulosus* and *P. rostratus* are found in all habitats. *D. rufulus*, *M. erythroleucus*, *L. striatus*, *G. kempii*, *Arvicanthis* sp. and *T. swinderianus*, appeared to be restricted to savannas with some also occurring at high elevations up to 1600 m.

Like Misonne & Verschuren (1976), we can conclude that there is no rodent community restricted to the edaphic savannas of the Nimba summit, contrary to other vertebrate and invertebrate taxa (Lamotte & Roy 2003).

Biogeographical affinities of Nimba rodents

We did not find any strict endemic rodent species at Mount Nimba despite the presence of endemic bats and shrews (Monadjem *et al.* 2016; Denys *et al.* 2021). However, Mount Nimba displays an exceptionally good assemblage of West African Upper Guinean Forest rodents (15 species) as well as Guineo-Congolian forests elements (15 species) which make this zone one of highest priority for conservation in West Africa (Table 13). Add to this Mount Ziama and Mount Loma and the only partially explored Simandou range, this region represents one of the highest biodiversity hotspots of African forests, as shown for bats (Monadjem *et al.* 2016). This confirms that the Guinean montane forest ecoregion is a valid diversity spot as highlighted by Dinerstein *et al.* (2017)

This ecoregion concerns the Nimba range plus Ziama and Mount Loma plus Pic de Fon in the Simandou range. It has a disjoint distribution and each of these highlands are isolated from each other, which may represent a challenge for their conservation.

Potential threats and conservation status of Nimba rodents

No threatened rodent species were recorded during our study but some species are poorly known. *G. macmillani* and *D. lachaisei*, are considered as Data Deficient on the IUCN Red List. Concerning the older Nimba collections, *Graphiurus crassicaudatus* is listed as Data Deficient according to Gerrie & Kennerley (2016). This is a poorly-known forest species that was recorded from very few localities. Similarly, the murine *Oenomys ornatus* is classified as Data Deficient (Cassola 2019). The fact that none of these species has been recorded during this study confirms their rarity. *Uranomys ruddi* is classified as Least Concern species but its populations are widely scattered and decreasing (IUCN 2017). Some taxa recently elevated to species rank like *H. simus* or *G. natglasii* have yet no IUCN assessments. The populations of *H. simus* have a broad distribution through primary and secondary forests of Guinea, Liberia and Côte d'Ivoire and do not seem to have a conservation concern while for *G. natglasii* nothing is known about their population trend. *Allosciurus aubinii* is now considered Near Threatened (Decher & Koprowski 2020) and is forest-dependent. Similarly, *A. derbianus* and *Idiurus macrotis* are classified as Least Concern but their records in West Africa are very limited and the West African populations of these species, are poorly known and most likely already threatened by forest loss. None of these species was recovered as bushmeat in the Nimba markets by Bene *et al.* (2013) or in a study in Guinean side villages by Dufour (2006).

The fact that no rodent species are listed as threatened by the IUCN does not necessarily mean that there are no ro-

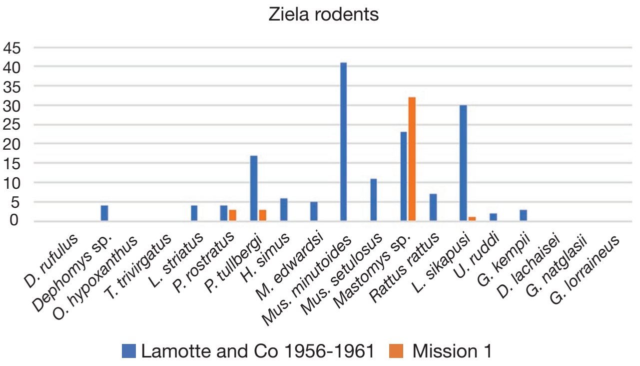

FIG. 12. — Comparison of rodent species collected through old MNHN collections and during Mission 1 in Ziela locality (Guinea).

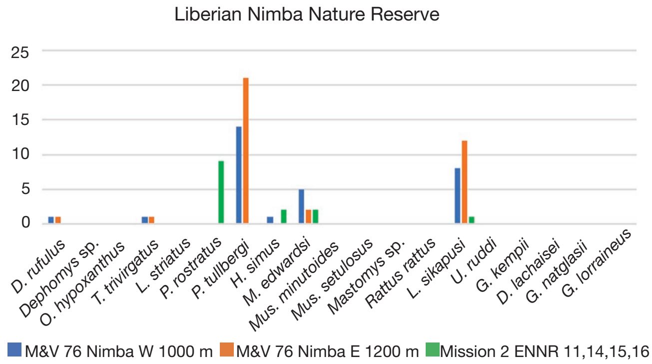

FIG. 14. — Comparison between East and West Nimba Nature reserve (Liberia) rodents collected through Misonne & Verschuren (1976) (M&V) mission and collections and during Mission 2 in East Nimba reserve (ENNR).

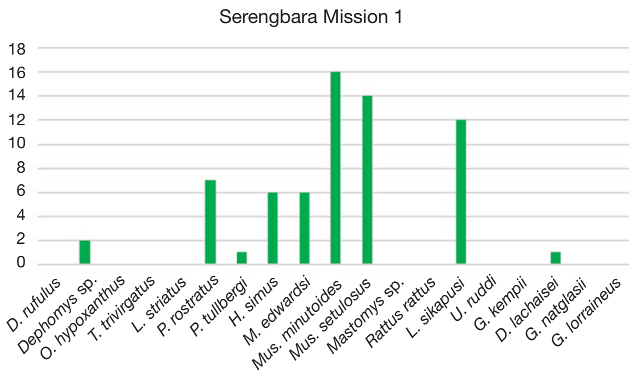

FIG. 13. — Serengbara (Guinea) rodents collected during Mission 1.

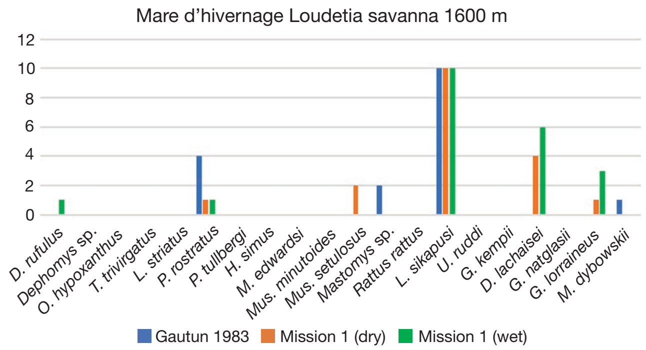

FIG. 15. — Comparison of the rodent species collected during Gautun (1983) and Mission 1 (this work in dry and wet seasons) in Mare d'hivernage (Guinea).

dents of conservation concern in the Nimba range. All the larger rodents of the Hystricidae, Cricetomyinae, Sciuridae and Thryonomyidae are under heavy hunting pressure by local hunters (Dufour 2006). This was confirmed by speaking to local hunters, and by the fact that squirrels are only very rarely seen. Furthermore, a bushmeat study conducted in the ArcelorMittal concession area (Bene *et al.* 2013) also confirmed that most of the animals hunted within the concession are rodents.

Comparisons of faunal compositions per localities through time

Some Nimba localities like Ziéla, Serengbara (gallery forest, swamps, cultivated) or Grassfield (edaphic savanna, ecotone with secondary forest), East and West Nimba Nature Reserve (mountain forest 1000-1200m) or Mare d'hivernage (altitude edaphic *Loudetia* savanna) were sampled in the 1960-1970s by Heim de Balsac & Lamotte (1958), Gautun *et al.* (1986), Misonne & Verschuren (1976), and our fieldwork (2008-2023), which allowed some comparisons of the rodent faunal evolution in these localities through time.

For Ziela locality, we found a lower rodent diversity during Mission 1 compared to old MNHN collections but our recent trapping effort was restricted in that area (Fig. 11). *Mastomys*, *Mus* and *Praomys* and *Lophuromys* dominated the assemblages in the 1960-1970s. Here we recovered only *Mastomys*, *Praomys* and *Lophuromys*. The villages of Ziela and Foromota may have seen human population increases through political instability and this may have lead to species diversity reduction and promoted anthropophilous species.

The Serengbara locality is very close (5 km) to the Bossou chimpanzees (*Pan troglodytes verus* Schwarz, 1934) Research station, a chimp population that is famous for using sophisticated tools. This population is isolated from others and it has been shown recently that they preferentially use forest habitat types for traveling and resting and highly disturbed habitat types for socializing (Bryson-Morrison *et al.* 2017). This forest has never been explored for small mammals and does not belong to the Nimba nature reserves.

In 2008 during Mission 1 we found nine species of rodents in the primary and secondary patches of forests including *D.* cf. *eburneae*, which is a new record for that region and *D. lachaisei*, *M. edwardsi*, both endemic to West Africa (Fig. 13).

Concerning the Liberian Nature reserve, a total of seven rodent species were recorded. In the Eastern part of the Reserve (ENNR), four species were recovered during Mission 2, compared to five reported by Misonne & Verschuren (1976). In all missions, *Praomys*, *Malacomys* and *Lophuromys* are abundant. No savanna rodents like *Dasymys*, *Oenomys*, *Lemniscomys*, *Gerbilliscus* or *Mastomys* have yet been recorded there (Fig. 14).

By comparing the UNESCO "Mare d'hivernage *Loudetia* savanna site" rodents between fieldwork of 1983 and Mission 1 during the wet and dry seasons (2008), we found quite a low species diversity (4-5 species per capture session and a total of 8 species) and a dominance of *L. sikapusi* and *D. lachaisei* at that site, as reported by Misonne & Verschuren (1976). Compared to Gautun *et al.* (1986), we were unable to capture *Mylomys dybowskii*, but we did trap *D. rufulus* (Fig. 15).

The UNESCO Mare d'hivernage site also yielded four species of West African shrews (*C. jouvenetae* Heim de Balsac, 1958, *C. obscurior* Heim de Balsac, 1958, *C. theresae* Heim de Balsac, 1968 and *S. megalura* Jentink, 1888; Denys *et al.* 2021) and the endemic frog *Nectophrynoides* Noble, 1926 as well as other insects and gastropods (Lamotte & Roy 1962, 2003), which testifies to its importance and the relative intact condition of the site at the time of our survey (2008).

The Grassfield edaphic savanna of Liberia has been intensively sampled by Misonne & Verschuren (1976) and by us during Mission 3 and we found voucher specimens from this locality in the MNHN collections (reported here on the figure under the label Lamotte & collaborators 1966). The total rodent diversity of this site reaches 16 species with a maximum of 14 species collected by Misonne & Verschuren (1976). Mission 3 allowed the capture of seven genera and we were unable to catch *Dasymys*, *Dephomys*, *Typomys*, *Oenomys*, *Dendromus*, and *Graphiurus* at that locality (Fig. 16).

The comparison of faunal assemblages through time and across localities shows that in general we were not able to recover the previous diversity. As an example, at Mare d'hivernage and Grassfield, we could not recover the "savanna" rodent taxa like *Arvicanthis*, *Oenomys*, *Uranomys*, *Mylomys*, *P. daltoni*, and *T. gracilis*. Other "savanna" species such as *Dasymys*, *Lemniscomys*, and *Grammomys* were collected in low frequencies. This contradicts Monadjem *et al.* (2016), who showed for bats that there was an "invasion" of savanna species into Nimba in recent years.

However, more fieldwork in this region is necessary to better understand the ecology, ecosystem functioning and to predict future evolutionary trends under global climate change for this unique type of habitat for small mammals.

Conclusion

In summary, Mount Nimba harbours an exceptional rodent diversity. The presence of savanna, montane forest and lowland forest taxa in sympatry increases its importance for future conservation actions. The area supports a unique sample of West African lowland and montane forests that is distinct from other highlands of the Guinean ecoregion.

Besides the exceptional diversity of rodents, we must acknowledge those of shrews and bats (Denys *et al.* 2021, 2013; Monadjem *et al.* 2016). Some micro-mammals, like the otter-shrew *Micropotamogale lamottei* Heim de Balsac, 1954 (Monadjem *et al.* 2019) or the Nimba shrew *Crocidura nimbae* Heim de Balsac, 1956, *Crocidura nimbasilvanus* Hutterer, 2003, or the bat *Hipposideros lamottei* Brosset, 1968 (Monadjem *et al.* 2013) and other vertebrates and

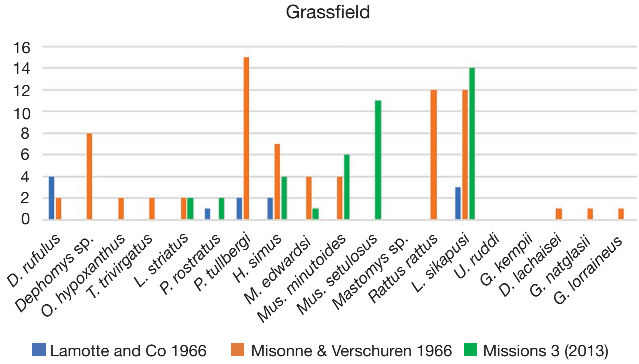

Fig. 16. — Comparison of rodent species collected by Lamotte and collaborators (1966 and later), Misonne & Verschuren (1976) and during Mission 3 (this work) in Grassfield (Liberia).

invertebrate species (Lamotte & Roy, 2003) further corroborate the importance of the Biosphere Reserve of the Mount Nimba and the need to protect all its endemics through the preservation of all types of habitats and their respective mammalian communities. Our field surveys showed that all types of habitats at Nimba, not only the Mare d'hivernage Unesco site at 1600 m a.s.l. are necessary for conserving this small mammal diversity. In order to preserve this unique mammalian diversity, Mount Nimba Strict Nature Reserve on the Guinean and Côte d'Ivoire sides of the mountain, and the East Nimba Nature Reserve on the Liberian side still need full protection and should eventually be expanded to lower altitudes. This is especially true for the remaining patches of primary lowland and montane forests below 1200 m a.s.l. Nevertheless, this ecosystem is highly threatened by intensive human activities such as agricultural intensification through cacao, coffee, rubber and oil palm plantations; wood extraction; poaching and bushmeat trade; iron ore mining as well as seasonal (https://whc.unesco.org/en/activities/1058) and frequently anthropic fires (Poilecot & Loua 2009) that are all serious concerns for this unique mountain of Africa.

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SPOT (Service de preparation ostéologique et taxidermique) (Paris, MNHN). Peter Farnloe and Moses Darpey provided fantastic assistance in the field; their effort and company were greatly appreciated. Tanya Romanenko was always quick to provide support wherever it was needed during earlier trips to Liberian Nimba. Martyn Gest is thanked for helping in the field during March 2013. Wing-Yunn Crawley and John Howell, ArcelorMittal, have provided critical support for continued biodiversity studies on the ArcelorMittal concession. AM and CD were employed by ArcelorMittal and SMFG and had signed non-disclosure agreements with these mining companies. Molecular analyses were performed at the Service de Systematique Moleculaire (UMS 2700 Acquisition et Analyse de Données pour l'Histoire naturelle [2AD], MNHN, Paris).

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APPENDICES

Appendix 1. — Guinean Nimba Mission 1 specimens.

Voucher MNHN-ZM-	Field number	Species	Locality	Karyotype	Cyt.B	Morphometrics
2011-1	NIM I-3	*Dendromus lachaisei*	Serengbara	–	–	×
2011-10	NIM II-53	*Dendromus lachaisei*	Mont Nimba	–	–	×
2011-11	NIM II-81	*Dendromus lachaisei*	Mont Nimba	–	–	×
2011-12	NIM II-115	*Dendromus lachaisei*	Mont Nimba	–	×	×
2011-13	NIM II-13	*Dendromus lachaisei*	Mont Nimba	–	×	×
2011-14	NIM I-278	*Dendromus lachaisei*	Mont Nimba	×	×	×
2011-2	NIM I-215	*Dendromus lachaisei*	Gouan	–	–	×
2011-3	NIM I-265	*Dendromus lachaisei*	Gouan	–	–	×
2011-4	NIM I-285	*Dendromus lachaisei*	Mont Nimba	–	–	×
2011-5	NIM I-297	*Dendromus lachaisei*	Mont Nimba	–	–	×
2011-559	NIM I-182	*Mus setulosus*	Gbie	–	×	–
2011-560	NIM I-198	*Mus minutoides*	Gbie	–	×	–
2011-561	NIM I-200	*Mus setulosus*	Gbie	–	×	–
2011-562	NIM I-203	*Mus setulosus*	Gbie	–	×	–
2011-563	NIM I-205	*Mus setulosus*	Gbie	–	×	–
2011-564	NIM I-207	*Hylomyscus simus*	Gbie	–	×	–
2011-565	NIM I-224	*Praomys rostratus*	Gouan	–	×	×
2011-566	NIM I-225	*Mus minutoides*	Gouan	–	×	–
2011-567	NIM I-226	*Praomys rostratus*	Gouan	–	×	×
2011-568	NIM I-229	*Mus minutoides*	Gouan	–	×	–
2011-569	NIM I-231	*Mus setulosus*	Gouan	–	×	–
2011-570	NIM I-234	*Mus baoulei*	Gouan	–	×	–
2011-571	NIM I-236	*Mus minutoides*	Gouan	–	×	–
2011-572	NIM I-246	*Hylomyscus simus*	Gouan	–	×	–
2011-573	NIM I-254	*Lophuromys sikapusi*	Gouan	–	×	–
2011-574	NIM I-260	*Hylomyscus simus*	Gouan	–	×	–
2011-575	NIM I-283	*Hylomyscus simus*	Gouan	–	×	–
2011-576	NIM I-286	*Praomys rostratus*	Gouan	–	×	×
2011-577	NIM I-300	*Hylomyscus simus*	Gouan	–	×	–
2011-578	NIM I-318	*Dasymys rufulus*	Gouan	–	×	×
2011-579	NIM I-324	*Mus setulosus*	Gouan	×	×	–
2011-580	NIM I-325	*Mus minutoides*	Gouan	–	×	–
2011-581	NIM I-331	*Mus minutoides*	Gouan	–	×	–
2011-582	NIM I-63	*Mus minutoides*	Serengbara	–	×	–
2011-583	NIM I-64	*Mus setulosus*	Serengbara	–	×	–
2011-584	NIM I-223	*Praomys* sp.	Gouan	–	×	–
2011-587	GBE64	*Praomys tullbergi*	Gblayougouma	–	×	–
2011-588	GBE79	*Mus setulosus*	Gblayougouma	–	×	–
2011-589	GBE84	*Mastomys natalensis*	Gblayougouma	–	×	×
2011-590	GBE85	*Mastomys natalensis*	Gblayougouma	–	×	×
2011-591	GBE86	*Mastomys natalensis*	Gblayougouma	–	×	×
2011-592	GBE87	*Mastomys* sp.	Gblayougouma	–	–	×
2011-593	GBE88	*Mastomys natalensis*	Gblayougouma	–	–	×
2011-594	GBE92	*Praomys tullbergi*	Gblayougouma	–	×	×
2011-6	NIM II-27	*Dendromus lachaisei*	Mont Nimba	–	–	–
2011-602	ZIE1	*Mastomys natalensis*	Foromota Ziela	–	×	×
2011-605	ZIE2	*Mastomys natalensis*	Foromota Ziela	–	×	×
2011-606	ZIE25	*Mastomys* sp.	Foromota Ziela	–	–	×
2011-607	ZIE27	*Mastomys* sp.	Foromota Ziela	–	–	×
2011-608	ZIE28	*Mastomys* sp.	Foromota Ziela	–	–	×
2011-609	ZIE42	*Praomys rostratus*	Foret galerie Ziela	–	×	–
2011-610	ZIE43	*Praomys tullbergi*	Foret Ziela	–	×	×
2011-611	ZIE44	*Praomys tullbergi*	Foret Ziela	–	×	–
2011-612	ZIE45	*Praomys tullbergi*	Foret Ziela	–	×	–
2011-613	ZIE50	*Praomys rostratus*	Ziela	–	×	×
2011-7	NIM II-28	*Dendromus lachaisei*	Mont Nimba	–	×	×
2011-8	NIM II-38	*Dendromus lachaisei*	Mont Nimba	–	×	×
2011-9	NIM II-39	*Dendromus lachaisei*	Mont Nimba	–	–	×
2021-1693	NIM II-118	*Dasymys rufulus*	Gouan/CitéII	–	×	–
2021-1694	SER-167	*Dephomys* cf.*eburneae*	Serengbara	×	×	×
2021-1695	NIM II-19	*Typomys trivirgatus*	Gouan	–	–	–
2021-1696	NIM I-189	*Lemniscomys striatus*	Gbie	–	×	–
2021-1697	NIM II-86	*Graphiurus* cf.*lorraineus*	Mare d'hivernage	–	–	–
2021-1698	NIM II-61	*Graphiurus* cf.*lorraineus*	Mare d'hivernage	–	–	–
2021-1699	NIM II-87	*Graphiurus* cf.*lorraineus*	Mare d'hivernage	–	–	–

Appendix 1. — Continuation.

Voucher MNHN-ZM-	Field number	Species	Locality	Karyotype	Cyt.B	Morphometrics
2021-1700	SER-147	*Lophuromys sikapusi*	Serengbara	–	–	–
2021-1701	SER-161	*Lophuromys sikapusi*	Serengbara	–	–	–
2021-1702	SER-165	*Lophuromys sikapusi*	Serengbara	–	–	–
2021-1703	SER-168	*Lophuromys sikapusi*	Serengbara	×	–	–
2021-1704	SER-188	*Lophuromys sikapusi*	Serengbara	×	–	–
2021-1705	GBI-210	*Lophuromys sikapusi*	Gbié	×	–	–
2021-1705	SER-166	*Lophuromys sikapusi*	Serengbara	×	–	–
2021-1707	GBI-211	*Lophuromys sikapusi*	Gbié	–	–	–
2021-1708	GBI-213	*Lophuromys sikapusi*	Gbié	–	–	–
2021-1709	GBI-216	*Lophuromys sikapusi*	Gbié	–	–	–
2021-1710	GBI-217	*Lophuromys sikapusi*	Gbié	–	–	–
2021-1711	GBI-222	*Lophuromys sikapusi*	Gbié	×	–	–
2021-1712	GBI-249	*Lophuromys sikapusi*	Gbié	–	–	–
2021-1713	GBI-250	*Lophuromys sikapusi*	Gbié	×	–	–
2021-1714	NIM II-116	*Lophuromys sikapusi*	Gouan/CitéII	–	–	–
2021-1715	NIM II-117	*Lophuromys sikapusi*	Gouan/CitéII	–	–	–
2021-1716	NIM II-120	*Lophuromys sikapusi*	Gouan/CitéII	–	–	–
2021-1717	NIM II-123	*Lophuromys sikapusi*	Gouan/CitéII	×	–	–
2021-1718	NIM II-24	*Lophuromys sikapusi*	Gouan	–	×	–
2021-1719	NIM II-30	*Lophuromys sikapusi*	Mare d'hivernage	–	×	–
2021-1720	NIM II-31	*Lophuromys sikapusi*	Mare d'hivernage	–	×	–
2021-1721	NIM II-42	*Lophuromys sikapusi*	Mare d'hivernage	–	×	–
2021-1722	NIM II-48	*Lophuromys sikapusi*	Gouan	–	–	–
2021-1723	NIM II-5	*Lophuromys sikapusi*	Mare d'hivernage	–	–	–
2021-1724	NIM II-51	*Lophuromys sikapusi*	Pierré Richaud	–	×	–
2021-1725	NIM II-65	*Lophuromys sikapusi*	Gouan	–	×	–
2021-1726	NIM II-66	*Lophuromys sikapusi*	Gouan	–	×	–
2021-1727	NIM II-67	*Lophuromys sikapusi*	Gouan	–	–	–
2021-1728	NIM II-68	*Lophuromys sikapusi*	Gouan	–	–	–
2021-1729	NIM II-71	*Lophuromys sikapusi*	Mare d'hivernage	–	×	–
2021-1730	NIM II-73	*Lophuromys sikapusi*	Mare d'hivernage	–	–	–
2021-1731	NIM II-83	*Lophuromys sikapusi*	Mare d'hivernage	–	×	–
2021-1732	NIM II-84	*Lophuromys sikapusi*	Mare d'hivernage	–	×	–
2021-1733	NIM II-85	*Lophuromys sikapusi*	Mare d'hivernage	–	–	–
2021-1734	NIM II-89	*Lophuromys sikapusi*	Gouan	–	–	–
2021-1735	NIM II-91	*Lophuromys sikapusi*	Source de Zié	–	×	–
2021-1736	NIM II-94	*Lophuromys sikapusi*	Source de Zié	–	×	–
2021-1737	NIM I-20	*Lophuromys sikapusi*	Serengbara	–	–	–
2021-1738	NIM I-21	*Lophuromys sikapusi*	Serengbara	–	–	–
2021-1739	NIM I-29	*Lophuromys sikapusi*	Serengbara	–	–	–
2021-1740	NIM I-58	*Lophuromys sikapusi*	Serengbara	–	–	–
2021-1741	NIM I-65	*Lophuromys sikapusi*	Serengbara	–	–	–
2021-1742	NIM I-165	*Lophuromys sikapusi*	Gbie	–	–	–
2021-1743	NIM I-169	*Lophuromys sikapusi*	Gbie	–	–	–
2021-1744	NIM I-170	*Lophuromys sikapusi*	Gbie	–	–	–
2021-1745	NIM I-171	*Lophuromys sikapusi*	Gbie	–	–	–
2021-1746	NIM I-173	*Lophuromys sikapusi*	Gbie	–	–	–
2021-1747	NIM I-180	*Lophuromys sikapusi*	Gbie	–	–	–
2021-1748	NIM I-184	*Lophuromys sikapusi*	Gbie	–	–	–
2021-1749	NIM I-195	*Lophuromys sikapusi*	Gbie	–	–	–
2021-1750	NIM I-197	*Lophuromys sikapusi*	Gbie	–	–	–
2021-1751	NIM I-204	*Lophuromys sikapusi*	Gbie	–	–	–
2021-1752	NIM I-214	*Lophuromys sikapusi*	Gouan	–	–	–
2021-1753	NIM I-220	*Lophuromys sikapusi*	Gouan	–	–	–
2021-1754	NIM I-249	*Lophuromys sikapusi*	Gouan	–	–	–
2021-1755	NIM I-253	*Lophuromys sikapusi*	Gouan	–	–	–
2021-1756	NIM I-255	*Lophuromys sikapusi*	Gouan	–	–	–
2021-1757	NIM I-256	*Lophuromys sikapusi*	Gouan	–	–	–
2021-1758	NIM I-257	*Lophuromys sikapusi*	Gouan	–	–	–
2021-1759	NIM I-274	*Lophuromys sikapusi*	Gouan	–	–	–
2021-1760	NIM I-275	*Lophuromys sikapusi*	Gouan	–	–	–
2021-1761	NIM I-276	*Lophuromys sikapusi*	Gouan	–	–	–
2021-1762	NIM I-291	*Lophuromys sikapusi*	Gouan	–	–	–
2021-1763	ZIE49	*Lophuromys sikapusi*	Ziela	–	–	–
2021-1764	GBE58	*Lophuromys sikapusi*	Gblayougouma	–	–	–
2021-1765	GBE62	*Lophuromys sikapusi*	Gblayougouma	–	–	–
2021-1766	GBE63	*Lophuromys sikapusi*	Gblayougouma	–	–	–
2021-1767	GBE82	*Lophuromys sikapusi*	Gblayougouma	–	–	–

Appendix 1. — Continuation.

Voucher MNHN-ZM-	Field number	Species	Locality	Karyotype	Cyt.B	Morphometrics
2021-1768	GBE91	*Lophuromys sikapusi*	Gblayougouma	–	–	–
2021-1769	NIM I-166	*Lophuromys sikapusi*	Gbie	–	–	–
2021-1771	NIM I-308	[redacted]	Gouan	–	–	×
2021-1772	NIM I-309	[redacted]	Gouan	–	–	×
2021-1773	NIM I-174	*Mastomys natalensis*	Gbie	–	–	–
2021-1774	NIM I-187	*Mastomys natalensis*	Gbie	×	–	×
2021-1775	NIM I-192	*Mastomys natalensis*	Gbie	–	–	×
2021-1776	NIM II-124	*Mastomys natalensis*	Gouan/CitéII	×	–	×
2021-1777	GBE52	*Mastomys natalensis*	Gblayougouma	–	×	×
2021-17770	NIM I-199	[redacted]	Gbie	–	×	×
2021-1778	ZIE3	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1779	ZIE4	*Mastomys* sp.	Foromota Ziela	–	–	–
2021-1780	ZIE5	*Mastomys* sp.	Foromota Ziela	–	–	–
2021-1781	ZIE6	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1782	ZIE8	*Mastomys* sp.	Foromota Ziela	–	–	–
2021-1783	ZIE11	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1784	ZIE12	*Mastomys* sp.	Foromota Ziela	–	–	–
2021-1785	ZIE17	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1786	ZIE18	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1787	ZIE19	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1788	ZIE21	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1789	ZIE22	*Mastomys* sp.	Foromota Ziela	–	–	–
2021-1790	ZIE23	*Mastomys* sp.	Foromota Ziela	–	–	–
2021-1791	ZIE26	*Mastomys* sp.	Foromota Ziela	–	–	–
2021-1792	ZIE32	*Mastomys* sp.	Foromota Ziela	–	–	–
2021-1793	ZIE33	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1794	ZIE36	*Mastomys* sp.	Foromota Ziela	–	–	–
2021-1795	ZIE37	*Mastomys* sp.	Foromota Ziela	–	–	–
2021-1796	GBE53	*Mastomys* cf. *natalensis*	Gblayougouma	–	–	×
2021-1797	GBE55	*Mastomys* cf. *natalensis*	Gblayougouma	–	–	×
2021-1798	GBE54	*Mastomys* cf. *natalensis*	Gblayougouma	–	–	×
2021-1799	GBE56	*Mastomys* cf. *natalensis*	Gblayougouma	–	–	×
2021-1800	GBE66	*Mastomys* cf. *natalensis*	Gblayougouma	–	–	×
2021-1801	GBE68	*Mastomys* sp.	Gblayougouma	–	–	–
2021-1802	GBE70	*Mastomys* cf. *natalensis*	Gblayougouma	–	–	×
2021-1803	GBE72	*Mastomys* cf. *natalensis*	Gblayougouma	–	–	×
2021-1804	GBE81	*Mastomys* cf. *natalensis*	Gblayougouma	–	–	×
2021-1805	GBE83	*Mastomys* cf. *natalensis*	Gblayougouma	–	–	×
2021-1806	NIM I-333	*Thryonomys swinderianus*	Gouan	–	–	–
2021-1807	NIM I-259	*Thryonomys swinderianus*	Gouan	–	–	–
2021-1808	ZIE7	*Mastomys* sp.	Foromota Ziela	–	–	–
2021-1809	ZIE9	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1810	ZIE13	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1813	ZIE16	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1814	ZIE14	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1814	ZIE20	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1815	ZIE15	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1815	ZIE29	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1816	ZIE30	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1817	ZIE31	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1818	ZIE34	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1819	ZIE35	*Mastomys* cf. *natalensis*	Foromota Ziela	–	–	×
2021-1820	GBE51	*Mastomys* cf. *natalensis*	Gblayougouma	–	–	×
2021-1821	GBE67	*Mastomys* cf. *natalensis*	Gblayougouma	–	–	×
2021-1822	GBE69	*Mastomys* sp.	Gblayougouma	–	–	–
2021-1823	GBE71	*Mastomys* cf. *natalensis*	Gblayougouma	–	–	×
2021-1824	GBE73	*Mastomys* cf. *natalensis*	Gblayougouma	–	–	×
2021-1825	GBE74	*Mastomys* sp.	Gblayougouma	–	–	–
2021-1826	GBE75	*Mastomys* cf. *natalensis*	Gblayougouma	–	–	×
2021-1827	GBE76	*Mastomys* cf. *natalensis*	Gblayougouma	–	–	×
2021-1828	GBE77	*Mastomys* sp.	Gblayougouma	–	–	–
2021-1829	GBE80	*Mastomys* sp.	Gblayougouma	–	–	–
2021-1830	NIM I-326	*Hylomyscus simus*	Gouan	–	×	–
2021-1831	NIM I-327	*Hylomyscus simus*	Gouan	–	×	–
2021-1832	NIM I-83	*Hylomyscus simus*	Serengbara	–	–	–
2021-1833	SER-163	*Hylomyscus simus*	Serengbara	×	×	–
2021-1834	SER-172	*Hylomyscus simus*	Serengbara	×	×	–
2021-1835	SER-173	*Hylomyscus simus*	Serengbara	×	–	–

Appendix 1. — Continuation.

Voucher MNHN-ZM-	Field number	Species	Locality	Karyotype	Cyt.B	Morphometrics
2021-1836	SER-186	*Hylomyscus simus*	Serengbara	×	–	–
2021-1837	SER-191	*Hylomyscus simus*	Serengbara	×	–	–
2021-1838	NIM I-270	*Praomys* sp.	Gouan	–	–	–
2021-1839	NIM I-19	*Praomys rostratus*	Serengbara	–	×	×
2021-1840	NIM I-25	*Praomys rostratus*	Serengbara	–	×	×
2021-1841	NIM II-121	*Praomys rostratus*	Gouan/CitéII	–	×	×
2021-1842	NIM II-60	*Praomys rostratus*	Mare d'hivernage	–	×	×
2021-1843	NIM II-92	*Praomys rostratus*	Source de Zié	–	×	×
2021-1844	NIM II-93	*Praomys rostratus*	Source de Zié	–	×	×
2021-1845	SER-170	*Praomys rostratus*	Serengbara	×	×	×
2021-1846	GBI-234	*Praomys rostratus*	Gbié	×	×	×
2021-1847	GBI-257	*Praomys rostratus*	Berge de Zié	×	×	–
2021-1848	GBI-198	*Praomys tullbergi*	Gbié	×	×	×
2021-1849	NIM I-15	*Praomys tullbergi*	Serengbara	–	×	–
2021-1851	NIM I-27	*Praomys tullbergi*	Serengbara	–	–	×
2021-1852	NIM I-82	*Hylomyscus simus*	Serengbara	–	–	–
2021-1853	NIM I-212	*Praomys* cf.*rostratus*	Gouan	–	–	×
2021-1854	NIM I-213	*Praomys* cf.*rostratus*	Gouan	–	–	×
2021-1855	NIM I-221	*Praomys* cf.*rostratus*	Gouan	–	–	×
2021-1856	NIM I-222	*Praomys* cf.*rostratus*	Gouan	–	–	×
2021-1857	NIM I-227	*Praomys* sp.	Gouan	–	–	–
2021-1858	NIM I-230	*Praomys* sp.	Gouan	–	–	–
2021-1859	NIM I-245	*Praomys* sp.	Gouan	–	–	–
2021-1860	NIM I-247	*Praomys* cf.*rostratus*	Gouan	–	–	×
2021-1861	NIM I-258	*Praomys* cf.*tullbergi*	Gouan	–	–	×
2021-1862	NIM I-269	*Praomys* sp.	Gouan	–	–	–
2021-1863	NIM I-271	*Praomys* sp.	Gouan	–	–	–
2021-1864	NIM I-272	*Praomys* cf.*rostratus*	Gouan	–	–	×
2021-1865	NIM I-273	*Praomys* sp.	Gouan	–	–	–
2021-1866	NIM I-277	*Praomys* cf.*tullbergi*	Gouan	–	–	×
2021-1867	NIM I-279	*Praomys* cf.*tullbergi*	Gouan	–	–	×
2021-1868	NIM I-284	*Praomys* sp.	Gouan	–	–	–
2021-1869	NIM I-287	*Praomys* sp.	Gouan	–	–	–
2021-1870	NIM I-289	*Praomys* sp.	Gouan	–	–	–
2021-1871	NIM I-290	*Praomys* cf.*rostratus*	Gouan	–	–	×
2021-1872	NIM I-314	*Praomys* sp.	Gouan	–	–	–
2021-1873	NIM I-330	*Praomys* sp.	Gouan	–	–	–
2021-1875	NIM II-49	[redacted]	Gouan	–	–	–
2021-1876	NIM II-50		Gouan	–	–	–
2021-1877	NIM II-74	*Praomys* sp.	Gouan	–	–	–
2021-1878	NIM II-75	*Praomys* sp.	Gouan	–	–	–
2021-1879	NIM II-88	*Praomys* sp.	Gouan	–	–	–
2021-1880	NIM II-90	*Praomys sp*	Gouan	–	–	–
2021-1881	NIM I-26	*Praomys* cf.*rostratus*	Serengbara	–	–	×
2021-1882	NIM I-216	*Praomys* cf.*rostratus*	Gouan	–	–	×
2021-1883	NIM I-233	*Praomys* sp.	Gouan	–	–	–
2021-1884	NIM I-248	*Praomys* cf.*rostratus*	Gouan	–	–	×
2021-1885	GBI-199	*Praomys rostratus*	Gbié	–	×	–
2021-1886	GBI-219	*Praomys rostratus*	Gbié	×	×	–
2021-1887	GBI-251	*Praomys* sp.	Gbié	–	–	–
2021-1888	GBE60	*Praomys rostratus*	Gblayougouma	–	×	–
2021-1889	GBE93	*Praomys rostratus*	Gblayougouma	–	×	–
2022-892	NIM I-13	*Mus minutoides*	Serengbara	–	×	–
2022-893	NIM I-14	*Mus minutoides ?*	Serengbara	–	–	–
2022-894	NIM I-16	*Mus minutoides*	Serengbara	–	×	–
2022-895	NIM I-30	*Mus minutoides ?*	Serengbara	–	–	–
2022-896	NIM I-31	*Mus minutoides ?*	Serengbara	–	–	–
2022-897	NIM I-32	*Mus minutoides ?*	Serengbara	–	–	–
2022-898	NIM I-73	*Mus minutoides*	Serengbara	–	×	–
2022-899	NIM I-74	*Mus minutoides*	Serengbara	–	×	–
2022-900	NIM I-75	*Mus minutoides*	Serengbara	–	×	–
2022-902	NIM I-77	*Mus minutoides ?*	Serengbara	–	–	–
2022-903	NIM I-78	*Mus minutoides ?*	Serengbara	–	–	–
2022-904	NIM I-94	*Mus minutoides ?*	Serengbara	–	–	–
2022-905	NIM I-188	*Mus minutoides ?*	Gbie	–	–	–
2022-906	NIM I-168	*Mus minutoides ?*	Gbie	–	–	–
2022-907	NIM I-17	*Mus setulosus*	Serengbara	–	×	–
2022-908	NIM I-18	*Mus setulosus ?*	Serengbara	–	–	–

Appendix 1. — Continuation.

Voucher MNHN-ZM-	Field number	Species	Locality	Karyotype	Cyt.B	Morphometrics
2022-909	NIM I-22	*Mus setulosus ?*	Serengbara	–	–	–
2022-910	NIM I-23	*Mus setulosus ?*	Serengbara	–	–	–
2022-912	NIM I-55	*Mus setulosus ?*	Serengbara	–	–	–
2022-913	NIM I-56	*Mus setulosus ?*	Serengbara	–	–	–
2022-914	NIM I-57	*Mus setulosus ?*	Serengbara	–	–	–
2022-915	NIM I-79	*Mus setulosus ?*	Serengbara	–	–	–
2022-916	NIM I-80	*Mus setulosus ?*	Serengbara	–	–	–
2022-917	NIM I-81	*Mus setulosus ?*	Serengbara	–	–	–
2022-918	NIM I-181	*Mus* sp.	Gbie	–	–	–
2022-919	NIM I-183	*Mus* sp.	Gbie	–	–	–
2022-920	NIM I-185	*Mus* sp.	Gbie	–	–	–
2022-921	NIM I-194	*Mus* sp.	Gbie	–	–	–
2022-922	NIM I-208	*Mus* sp.	Gouan	–	–	–
2022-923	NIM I-268	*Mus* sp.	Gouan	–	–	–
2022-924	NIM I-298	*Mus* sp.	Gouan	–	–	–
2022-925	NIM I-299	*Mus* sp.	Gouan	–	–	–
2022-926	NIM I-310	*Mus* sp.	Gouan	–	–	–
2022-927	NIM I-93	*Mus* sp.	Serengbara	–	–	–
2022-928	NIM II-64	*? Mus setulosus*	Gouan	–	–	–
2022-929	NIM II-76	*? Mus setulosus*	Gouan	–	–	–
2022-930	GBI-204	*Mus* sp.	Gbié	–	–	–
2022-931	NIM II-119	*Mus* sp.	Gouan/CitéII	–	–	–
2022-932	GBI-231	*? Mus setulosus*	Gbié	–	–	–
2022-933	GBI-195	*Mus minutoides*	Gbié	–	–	–
2022-934	GBI-215	*Mus minutoides*	Gbié	×	–	–
2022-935	GBI-230	*Mus minutoides*	Gbié	×	–	–
2022-936	SER-169	*Mus setulosus*	Serengbara	×	–	–
2022-937	GBI-240	*Mus setulosus*	Gbié	×	–	–
2022-938	GBI-233	*Lophuromys sikapusi*	Gbié	×	–	–
2022-939	GBE65	*Malacomys* sp.	Gblayougouma	–	–	–
2022-940	NIM II-22	*Malacomys edwardsi*	Gouan	–	–	–
2022-941	NIM II-33	*Malacomys edwardsi*	Gouan	–	–	–
2022-942	SER-146	*Malacomys edwardsi*	Serengbara	–	–	–
2022-943	SER-149	*Malacomys edwardsi*	Serengbara	–	–	–
2022-944	SER-164	*Malacomys edwardsi*	Serengbara	×	–	–
2022-945	SER-187	*Malacomys edwardsi*	Serengbara	×	–	–
2022-946	NIM I-97	*Malacomys* sp.	Serengbara	–	–	–
2022-947	NIM I-28	*Malacomys* sp.	Serengbara	–	–	–
2022-948	NIM II-23	[redacted]	Gouan	–	–	–
2022-949	NIM II-32	[redacted]	Gouan	–	–	–
2022-950	NIM II-34	[redacted]	Gouan	–	–	–
2022-951	NIM II-35	[redacted]	Gouan	–	–	–
2022-952	NIM II-36	[redacted]	Gouan	–	–	–
2022-953	NIM II-44	[redacted]	Gouan	–	–	–
2022-954	NIM II-45	[redacted]	Gouan	–	–	–
2022-955	NIM II-46	[redacted]	Gouan	–	–	–
2022-956	NIM II-47	[redacted]	Gouan	–	–	–
2022-957	NIM I-251	*Mastomys* sp.	Gouan	–	–	×
2022-958	NIM I-186	[redacted]	Gbie	–	×	–
CG 2011-587	GBE64	*Praomys tullbergi*	Gblayougouma	–	–	×
CG 2011-594	GBE92	*Praomys tullbergi*	Gblayougouma	–	–	×
CG2016-911	NIM I-33	*Mus setulosus ?*	Serengbara	–	–	–

Appendix 2. — Liberian Nimba missions 2 and 3 specimens. Abbreviation: **R**, released specimen in the field.

Catalogue no.	Field no.	species	Locality	Cyt B.	Morpho-metrics
DM12752	AM20101215_7	*Graphiurus lorraineus*	Mt. Gangra, adit 3	–	–
DM13172	AM2012_01_03_01	*Dephomys defua*	Yiti 4	×	–
DM13168	AM2011_12_19_01	*Typomys trivirgatus*	Tailings 1	×	–
DM13193	AM2011_12_21_02	*Hylomyscus simus*	Tailings 2	×	–
DM13194	AM2011_12_21_01	*Hylomyscus simus*	Tailings 2	×	–
DM13206	AM2011_12_27_01	*Hylomyscus simus*	ENNR 11	×	–
DM13169	AM2011_12_22_02	*Lophuromys sikapusi*	Tailings 4	×	–
DM13195	AM2011_12_18_05	*Lophuromys sikapusi*	Tailings 1	×	–
DM13173	AM2012_01_09_07	*Malacomys cansdalei*	Bentor 1	×	–
DM13170	AM2011_12_21_03	*Malacomys edwardsi*	Tailings 2	×	–
DM13191	AM2011_12_18_03	*Malacomys edwardsi*	Tailings 1	×	–
DM13192	AM2011_12_18_06	*Malacomys edwardsi*	Tailings 1	–	–
DM13174	AM2012_01_10_03	*Mus setulosus*	Bentor 1	×	–
DM13171	AM2011_12_18_04	*Praomys rostratus*	Tailings 1	×	–
DM13175	AM2011_12_18_02	*Praomys rostratus*	Tailings 1	×	–
DM13205	AM2012_01_05_02	*Rattus rattus*	Camp 4	×	–
R	–	*Hylomyscus simus*	Tailings 4	–	–
R	–	*Hylomyscus simus*	Tailings 7	–	–
R	–	*Hylomyscus simus*	Tailings 7	–	–
R	–	*Hylomyscus simus*	Tailings 7	–	–
R	–	*Hylomyscus simus*	Tailings 7	–	–
R	–	*Hylomyscus simus*	Tailings 7	–	–
R	–	*Hylomyscus simus*	Tailings 7	×	–
R	–	*Hylomyscus simus*	Tailings 7	–	–
R	–	*Hylomyscus simus*	ENNR 16	–	–
R	–	*Hylomyscus simus*	Bentor 1	–	–
R	–	*Hylomyscus simus*	Bentor 1	×	–
R	–	*Hylomyscus simus*	Bentor 1	–	–
R	–	*Hylomyscus simus*	Tailings 7	–	–
R	–	*Hylomyscus simus*	Tailings 2	–	–
R	–	*Hylomyscus simus*	Tailings 2	–	–
R	–	*Hylomyscus simus*	Tailings 2	–	–
R	–	*Hylomyscus simus*	Tailings 2	–	–
R	–	*Hylomyscus simus*	Tailings 2	–	–
R	–	*Hylomyscus simus*	Tailings 2	–	–
R	–	*Hylomyscus simus*	Tailings 2	–	–
R	–	*Hylomyscus simus*	Tailings 4	–	–
R	–	*Hylomyscus simus*	Bonlah 2	–	–
R	–	*Hylomyscus simus*	Bentor 1	–	–
R	–	*Hylomyscus simus*	Bentor 1	–	–
R	–	*Hylomyscus simus*	Bentor 1	–	–
R	–	*Lophuromys sikapusi*	Tailings 4	–	–
R	–	*Lophuromys sikapusi*	Tailings 4	–	–
R	–	*Lophuromys sikapusi*	Tailings 4	–	–
R	–	*Lophuromys sikapusi*	ENNR 15	–	–
R	–	*Lophuromys sikapusi*	Settlement 6	×	–
R	–	*Lophuromys sikapusi*	Tailings 7	–	–
R	–	*Lophuromys sikapusi*	Yiti 4	–	–
R	–	*Lophuromys sikapusi*	Tailings 4	–	–
R	–	*Lophuromys sikapusi*	Tailings 7	–	–
R	–	*Lophuromys sikapusi*	Settlement 6	–	–
R	–	*Lophuromys sikapusi*	Bonlah 1	–	–
R	–	*Lophuromys sikapusi*	Bonlah 1	–	–
R	–	*Lophuromys sikapusi*	Bonlah 1	–	–
R	–	*Lophuromys sikapusi*	Bonlah 1	–	–
R	–	*Lophuromys sikapusi*	Bonlah 1	–	–
R	–	*Lophuromys sikapusi*	Bentor 1	–	–
R	–	*Lophuromys sikapusi*	Bentor 1	–	–
R	–	*Lophuromys sikapusi*	Bentor 1	–	–
R	–	*Lophuromys sikapusi*	Bentor 1	–	–
R	–	*Malacomys edwardsi*	Tailings 7	–	–
R	–	*Malacomys edwardsi*	ENNR 15	–	–
R	–	*Malacomys edwardsi*	ENNR 15	–	–
R	–	*Malacomys edwardsi*	ENNR 15	×	–
R	–	*Malacomys edwardsi*	Yiti 4	–	–
R	–	*Malacomys edwardsi*	Yiti 4	×	–
R	–	*Malacomys edwardsi*	Tailings 1	–	–
R	–	*Malacomys edwardsi*	Tailings 1	–	–
R	–	*Malacomys edwardsi*	Tailings 1	–	–
R	–	*Malacomys edwardsi*	Tailings 1	–	–

Appendix 2. — Continuation.

Catalogue no.	Field no.	species	Locality	Cyt B.	Morpho-metrics
R	–	*Malacomys edwardsi*	Tailings 4	–	–
R	–	*Malacomys edwardsi*	Bonlah 2	–	–
R	–	*Malacomys edwardsi*	Bonlah 2	–	–
R	–	*Malacomys edwardsi*	Bentor 1	–	–
R	–	*Praomys rostratus*	ENNR 16	×	–
R	–	*Praomys rostratus*	Yiti 4	×	–
R	–	*Praomys* sp.	Tailings 4	–	–
R	–	*Praomys* sp.	Tailings 7	–	–
R	–	*Praomys* sp.	Tailings 7	–	–
R	–	*Praomys* sp.	Tailings 7	–	–
R	–	*Praomys* sp.	Tailings 7	–	–
R	–	*Praomys* sp.	ENNR 15	–	–
R	–	*Praomys* sp.	ENNR 15	–	–
R	–	*Praomys* sp.	ENNR 16	–	–
R	–	*Praomys* sp.	ENNR 16	–	–
R	–	*Praomys* sp.	ENNR 16	–	–
R	–	*Praomys* sp.	ENNR 16	–	–
R	–	*Praomys* sp.	ENNR 16	–	–
R	–	*Praomys* sp.	Yiti 4	–	–
R	–	*Praomys* sp.	Yiti 4	–	–
R	–	*Praomys* sp.	Yiti 4	–	–
R	–	*Praomys* sp.	Yiti 4	–	–
R	–	*Praomys* sp.	ENNR 16	–	–
R	–	*Praomys* sp.	Yiti 4	–	–
R	–	*Praomys* sp.	Tailings 1	–	–
R	–	*Praomys* sp.	Tailings 1	–	–
R	–	*Praomys* sp.	Tailings 1	–	–
R	–	*Praomys* sp.	Tailings 1	–	–
R	–	*Praomys* sp.	Tailings 1	–	–
R	–	*Praomys* sp.	Tailings 1	–	–
R	–	*Praomys* sp.	Tailings 1	–	–
R	–	*Praomys* sp.	Tailings 1	–	–
R	–	*Praomys* sp.	Tailings 2	–	–
R	–	*Praomys* sp.	Tailings 2	–	–
R	–	*Praomys* sp.	Tailings 4	–	–
R	–	*Praomys* sp.	Tailings 4	–	–
R	–	*Praomys* sp.	Settlement 6	–	–
R	–	*Praomys* sp.	Bentor 1	–	–
R	–	*Praomys* sp.	Bentor 1	–	–
MNHN-ZM-					
2014-1000	LB41	*Mus setulosus*	Grassfield	–	–
2014-1001	LB45	*Mus setulosus*	Grassfield	–	–
2014-1002	LB48	*Mus setulosus*	Grassfield	–	–
2014-1003	LB49	*Mus setulosus*	Grassfield	–	–
2014-1004	LB56	*Mus setulosus*	Grassfield	–	–
2014-1005	LB58	*Mus setulosus*	Liabala	–	–
2014-1006	LB64	*Mus setulosus*	Grassfield	–	–
2014-1007	LB70	*Mus setulosus*	Grassfield	–	–
2014-1008	LB72	*Mus setulosus*	Plantation Hevea	×	–
2014-1009	LB94	*Mus setulosus*	Plantation Hevea	–	–
2014-1010	LB119	*Mus setulosus*	Gbapa	–	–
2014-1011	LB120	*Mus setulosus*	Gbapa	–	–
2014-1012	LB156	*Mus setulosus*	camp 4 swamp	–	–
2014-1013	LB157	*Mus setulosus*	camp4 swamp	×	–
2014-1014	LB166	*Mus setulosus*	Border	–	–
2014-1015	LB175	*Mus setulosus*	Border	×	–
2014-1016	LB02	*Grammomys macmillani*	camp4	×	–
2014-1017	LB153	*Grammomys macmillani*	camp4	×	–
2014-1018	LB165	*Grammomys macmillani*	Border	×	–
2014-1019	LB27	*Hylomyscus simus*	Grassfield	–	–
2014-1020	LB29	*Hylomyscus simus*	Zolowee	–	–
2014-1021	LB35	*Hylomyscus simus*	Grassfield	–	–
2014-1022	LB43	*Hylomyscus simus*	Grassfield	×	–
2014-1023	LB67	*Hylomyscus simus*	Grassfield	×	–
2014-1024	LB118	*Hylomyscus simus*	Gbapa	×	–
2014-1025	LB133	*Hylomyscus simus*	Gbapa	×	–
2014-1026	LB134	*Hylomyscus simus*	Gbapa	–	–
2014-1027	LB88	*Typomys trivirgatus*	Plantation Hevea	–	–
2014-1028	LB73	*Praomys tullbergi*	Plantation Hevea	–	×

Appendix 2. — Continuation.

Catalogue no.	Field no.	species	Locality	Cyt B.	Morpho-metrics
2014-1029	LB77	*Praomys tullbergi*	camp4	–	–
2014-1030	LB93	*Praomys tullbergi*	Plantation Hevea	–	–
2014-1031	LB89	*Praomys tullbergi*	Plantation Hevea	–	×
2014-1032	LB96	*Praomys tullbergi*	Plantation Hevea	–	×
2014-1033	LB98	*Praomys tullbergi*	Plantation Hevea	–	×
2014-1034	LB100	*Praomys tullbergi*	Plantation Hevea	×	–
2014-1035	LB101	*Praomys tullbergi*	Plantation Hevea	–	–
2014-1036	LB111	*Praomys tullbergi*	Gbapa	–	×
2014-1037	LB127	*Praomys tullbergi*	Gbapa	–	–
2014-1038	LB159	*Praomys tullbergi*	Border	–	×
2014-1039	LB161	*Praomys tullbergi*	Border	–	–
2014-1040	LB174	*Praomys tullbergi*	Border	–	×
2014-1041	LB176	*Praomys tullbergi*	Border	–	–
2014-1042	LB06	*Praomys rostratus*	camp4	–	–
2014-1043	LB08	*Praomys rostratus*	camp4	–	×
2014-1044	LB11	*Praomys rostratus*	camp4	–	×
2014-1045	LB34	*Praomys rostratus*	Grassfield	–	×
2014-1046	LB86	*Praomys rostratus*	Plantation Hevea	–	×
2014-1047	LB85	*Praomys rostratus*	Plantation Hevea	–	×
2014-1049	LB91	*Praomys rostratus*	Plantation Hevea	–	×
2014-1050	LB117	*Praomys rostratus*	Gbapa	–	×
2014-1051	LB140	*Praomys rostratus*	Gbapa	–	×
2014-1052	LB132	*Praomys rostratus*	Gbapa	–	×
2014-1053	LB145	*Praomys rostratus*	camp4 swamp	–	×
2014-1054	LB158	*Praomys rostratus*	Border	–	×
2014-1055	LB164	*Praomys rostratus*	Border	–	×
2014-1056	LB167	*Praomys rostratus*	Zolowee	–	–
2014-1057	LB135	*Praomys rostratus*	Gbapa	–	×
2014-1058	LB147	*Praomys rostratus*	camp4 swamp	–	×
2014-1059	LB168	*Lophuromys sikapusi*	Zolowee	–	–
2014-309	LB53	*Malacomys edwardsi*	Grassfield	–	–
2014-310	LB74	*Malacomys edwardsi*	Plantation Hevea	–	–
2014-311	LB84	*Malacomys edwardsi*	Plantation Hevea	–	–
2014-312	LB87	*Malacomys edwardsi*	Plantation Hevea	–	–
2014-313	LB90	*Malacomys edwardsi*	Plantation Hevea	–	–
2014-314	LB97	*Malacomys edwardsi*	Plantation Hevea	–	–
2014-315	LB99	*Malacomys edwardsi*	Plantation Hevea	–	–
2014-316	LB102	*Malacomys edwardsi*	Plantation Hevea	–	–
2014-317	LB110	*Malacomys edwardsi*	Gbapa	–	–
2014-318	LB112	*Malacomys edwardsi*	Gbapa	–	–
2014-319	LB113	*Malacomys edwardsi*	Gbapa	–	–
2014-320	LB121	*Malacomys edwardsi*	Gbapa	–	–
2014-321	LB123	*Malacomys edwardsi*	Gbapa	–	–
2014-322	LB124	*Malacomys edwardsi*	Gbapa	–	–
2014-323	LB125	*Malacomys edwardsi*	Gbapa	–	–
2014-324	LB136	*Malacomys edwardsi*	Gbapa	–	–
2014-325	LB137	*Malacomys edwardsi*	Gbapa	–	–
2014-944	LB05	*Lophuromys sikapusi*	camp4	–	–
2014-945	LB10	*Lophuromys sikapusi*	camp4	–	–
2014-946	LB13	*Lophuromys sikapusi*	Zolowee	–	–
2014-947	LB14	*Lophuromys sikapusi*	Zolowee	–	–
2014-948	LB16	*Lophuromys sikapusi*	Grassfield	–	–
2014-949	LB18	*Lophuromys sikapusi*	Grassfield	–	–
2014-950	LB21	*Lophuromys sikapusi*	Zolowee	–	–
2014-951	LB23	*Lophuromys sikapusi*	Grassfield	–	–
2014-952	LB24	*Lophuromys sikapusi*	Grassfield	–	–
2014-953	LB33	*Lophuromys sikapusi*	Grassfield	–	–
2014-954	LB36	*Lophuromys sikapusi*	Grassfield	–	–
2014-955	LB39	*Lophuromys sikapusi*	Grassfield	–	–
2014-956	LB44	*Lophuromys sikapusi*	Grassfield	–	–
2014-957	LB52	*Lophuromys sikapusi*	Grassfield	–	–
2014-958	LB55	*Lophuromys sikapusi*	Grassfield	–	–
2014-959	LB65	*Lophuromys sikapusi*	Grassfield	–	–
2014-960	LB66	*Lophuromys sikapusi*	Grassfield	–	–
2014-961	LB68	*Lophuromys sikapusi*	Grassfield	–	–
2014-962	LB69	*Lophuromys sikapusi*	Grassfield	–	–
2014-963	LB95	*Lophuromys sikapusi*	Plantation Hevea	–	–
2014-964	LB103	*Lophuromys sikapusi*	Zolowee	–	–

Appendix 2. — Continuation.

Catalogue no.	Field no.	species	Locality	Cyt B.	Morpho-metrics
2014-965	LB104	*Lophuromys sikapusi*	Zolowee	–	–
2014-966	LB114	*Lophuromys sikapusi*	Gbapa	×	–
2014-967	LB126	*Lophuromys sikapusi*	Gbapa	–	–
2014-968	LB128	*Lophuromys sikapusi*	Zolowee	–	–
2014-969	LB139	*Lophuromys sikapusi*	Gbapa	–	–
2014-970	LB141	*Lophuromys sikapusi*	Zolowee	–	–
2014-971	LB146	*Lophuromys sikapusi*	camp4 swamp	–	–
2014-972	LB148	*Lophuromys sikapusi*	camp4 swamp	–	–
2014-973	LB154	*Lophuromys sikapusi*	camp4 swamp	–	–
2014-974	LB160	*Lophuromys sikapusi*	Border	–	–
2014-975	LB163	*Lophuromys sikapusi*	Border	–	–
2014-976	LB15	*Rattus rattus*	Zolowee	–	–
2014-977	LB22	*Rattus rattus*	Zolowee	–	–
2014-978	LB47	*Lemniscomys striatus*	Grassfield	–	–
2014-979	LB57	*Lemniscomys striatus*	Grassfield	–	–
2014-980	LB169	*Gerbilliscus kempii*	Border	×	×
2014-981	LB30	*Mus minutoides*	Grassfield	–	–
2014-982	LB31	*Mus minutoides*	Grassfield	×	–
2014-983	LB32	*Mus minutoides*	Grassfield	–	–
2014-984	LB46	*Mus minutoides*	Grassfield	–	–
2014-985	LB50	*Mus minutoides*	Grassfield	–	–
2014-986	LB51	*Mus minutoides*	Grassfield	×	–
2014-987	LB107	*Mus minutoides*	camp4	–	–
2014-988	LB144	*Mus minutoides*	camp4 swamp	×	–
2014-989	LB155	*Mus minutoides*	camp4 swamp	–	–
2014-990	LB178	*Mus minutoides*	Border	–	–
2014-991	LB179	*Mus minutoides*	Border	–	–
2014-992	LB180	*Mus minutoides*	Border	–	–
2014-993	LB181	*Mus minutoides*	Border	–	–
2014-994	LB182	*Mus minutoides*	camp4 swamp	×	–
2014-995	LB01	*Mus setulosus*	camp4	–	–
2014-996	LB17	*Mus setulosus*	Grassfield	×	–
2014-997	LB19	*Mus setulosus*	Grassfield	×	–
2014-998	LB26	*Mus setulosus*	Grassfield	×	–
2014-999	LB40	*Mus setulosus*	Grassfield	×	–
–	LB105	*Cricetomys gambianus*	Plantation Hevea	–	–

Appendix 3. — Old collections Nimba specimens.

Catalogue number MNHN-ZM-MO-	Field number	Date of collect	Genus	Initial species	Updated species	Locality
1955-660	–	–	*Arvicanthis*	*niloticus*	*Arvicanthis* sp.	
1962-2266	–	–	*Heliosciurus*	*punctatus*	–	Mont Nimba?
1964-382	6066	–	*Mus*	*setulosus*	–	Mont Nimba
1964-383	6098	–	*Mus*	*setulosus*	–	Yalé
1964-384	6067	–	*Mus*	*setulosus*	–	Yalé
1964-385	6328	–	*Mus*	*setulosus*	–	Ziéla
1964-386	42bis	–	*Mus*	*setulosus*	–	Ziéla
1964-387	91	–	*Mus*	*setulosus*	–	Ziela
1964-388	–	–	*Mus*	*setulosus*	–	Ziéla
1966-91	–	–	*Praomys*	*misonnei*	sp.	Ziela
1966-92	–	–	*Praomys*	*misonnei*	sp.	Ziela
1967-1418	–	–	*Graphiurus*	*hueti*	*nagtglasii*	Nimba
1970-236	–	–	*Graphiurus*	*hueti*	*nagtglasii*	Nimba
1980-165	516524	–	*Grammomys*	*buntingi*	*macmillani*	Mont Nimba
1981-1120	6187	–	*Oenomys*	*ornatus*	–	Mont Nimba
1981-1121	6373?	–	*Lemniscomys*	*striatus*	–	Yalé
1981-1123	–	–	*Uranomys*	*ruddi*	–	Ziela
1981-1124	6378	–	*Praomys*	*misonnei*	sp.	Veblo
1981-1125	130	–	*Praomys*	*misonnei*	sp.	Ziela
1981-437	–	24.III.1980	*Mastomys*	sp.	–	Zougué
1981-438	–	24.III.1980	*Mastomys*	sp.	–	Zougué
1981-557A B C	–	–	*Thryonomys*	*swinderianus*	–	Nimba crest
1981-558	–	–	*Cricetomys*	*gambianus*	–	Nimba crest
1982-589	–	1978	*Gerbilliscus*	*kempi*	*kempii*	Serengbara
1983-92	–	–	*Heliosciurus*	*punctatus*	–	Yalé
1983-93	–	–	*Heliosciurus*	*punctatus*	–	Yalé
1983-94	–	–	*Heliosciurus*	*gambianus*	–	Massif du Nimba
1983-96	81-450	–	*Heliosciurus*	*rufobrachium*	–	Massif du Nimba
1986-103	57220	–	*Dendromus*	*melanotis*	–	Nimba
1986-104	1218	–	*Graphiurus*	*murinus*	–	Mont Nimba
1986-105	51128	–	*Mus*	*minutoides*	–	Mont Nimba
1986-105	51128	–	*Mus*	*minutoides*	–	Mont Nimba
1986-106	6088	–	*Praomys*	*misonnei*	sp.	Ziela
1986-108	–	–	*Hylomyscus*	*simus*	–	Ziela
1986-109	–	–	*Hylomyscus*	*simus*	–	Yalé
1986-20	–	–	*Lophuromys*	*sikapusi*	–	Mont Nimba
1986-21	–	–	*Lophuromys*	*sikapusi*	–	Mont Nimba
1986-90	–	–	*Funisciurus*	*pyrropus*	–	Mont Nimba
1986-91	–	–	*Heliosciurus*	*gambianus*	–	Mont Nimba?
1986-92	–	–	*Heliosciurus*	*rufobrachium*	–	Massif du Nimba
1986-93	–	–	*Heliosciurus*	*gambianus*	–	Massif du Nimba
1986-94	–	–	*Heliosciurus*	*rufobrachium*	–	Massif du Nimba
1986-95	–	–	*Heliosciurus*	*rufobrachium*	–	Nimba
1987-128	1	–	*Thryonomys*	sp.	–	Mont Nimba
1987-129	1.III.2013	–	*Thryonomys*	sp.	–	Mont Nimba
1987-135	4954	–	*Paraxerus*	*poensis*	–	Vilter
1987-137	43	–	*Graphiurus*	*murinus*	–	Nzo
1987-138	44	–	*Graphiurus*	*murinus*	–	Nzo
1987-139	6249	–	*Cricetomys*	*emini*	–	Mont Nimba
1987-27	–	16.VI.1966	*Lophuromys*	*sikapusi*	–	Mont Nimba
1987-28	–	16.VI.1966	*Lophuromys*	*sikapusi*	–	Mont Nimba
1987-29	–	17.VI.1966	*Lophuromys*	*sikapusi*	–	Mont Nimba
1987-30	–	17.VI.1966	*Lophuromys*	*sikapusi*	–	Mont Nimba
1987-31	–	17.VI.1966	*Lophuromys*	*sikapusi*	–	Mont Nimba
1987-32	–	24.VI.1966	*Lophuromys*	*sikapusi*	–	Mont Nimba
1987-33	–	24.VI.1966	*Lophuromys*	*sikapusi*	–	Mont Nimba
1987-34	–	27.VI.1966	*Lophuromys*	*sikapusi*	–	Mont Nimba
1987-35	–	4.VI.1969	*Lophuromys*	*sikapusi*		Gbapa
1987-353	50	–	*Hylomyscus*	*alleni*	*simus*	Nzo
1987-356	61	–	*Dasymys*	*incomtus*	*rufulus*	Yalé
1987-357	–	–	*Lophuromys*	*sikapusi*	–	Mont Nimba
1987-358	694/87	–	*Lemniscomys*	*bellieri*	*L. m. bellieri*	Gbié
1987-36	–	4.VI.1969	*Lophuromys*	*sikapusi*	–	Gbapa
1987-37	–	4.VI.1969	*Lophuromys*	*sikapusi*	–	Gbapa
1987-38	–	4.VI.1969	*Lophuromys*	*sikapusi*	–	Gbapa
1987-39	–	4.VI.1969	*Lophuromys*	*sikapusi*	–	Gbapa
1987-40	–	VI.1966	*Rattus*	*rattus*	–	Mont Nimba
1987-41	–	VI.1966	*Lemniscomys*	*striatus*	–	Mont Nimba

Appendix 3. — Continuation.

Catalogue number MNHN-ZM-MO-	Field number	Date of collect	Genus	Initial species	Updated species	Locality
1987-42	–	3.V.1969	*Lemniscomys*	*striatus*	–	Mont Nimba
1987-43	–	3.V.1969	*Lemniscomys*	*striatus*	–	Mont Nimba
1987-44	–	3.V.1969	*Lemniscomys*	*striatus*	–	Mont Nimba
1987-45	–	3.V.1969	*Lemniscomys*	*striatus*	–	Mont Nimba
1987-46	–	3.V.1969	*Lemniscomys*	*striatus*	–	Mont Nimba
1987-47	–	3.V.1969	*Lemniscomys*	*striatus*	–	Mont Nimba
1987-49	L476	16.VI.1966	*Dasymys*	*rufulus*	–	Mont Nimba
1987-50	504	24.VI.1966	*Dasymys*	*rufulus*	–	Mont Nimba
1987-51	–	7.VI.1969	*Dasymys*	*rufulus*	–	Sawmill savanna Yéképé
1987-52	–	7.VI.1969	*Dasymys*	*rufulus*	–	Sawmill savanna Yéképé
1987-53	–	7.VI.1969	*Dasymys*	*rufulus*	–	Sawmill savanna Yéképé
1987-54	–	7.VI.1969	*Dasymys*	*rufulus*	–	Sawmill savanna Yéképé
1987-55	–	7.VI.1969	*Dasymys*	*rufulus*	–	Sawmill savanna Yéképé
1987-56	–	7.VI.1969	*Dasymys*	*rufulus*	–	Sawmill savanna Yéképé
1987-57	–	7.VI.1969	*Dasymys*	*rufulus*	–	Sawmill savanna Yéképé
1987-58	–	7.VI.1969	*Dasymys*	*rufulus*	–	Sawmill savanna Yéképé
1987-59	–	7.VI.1969	*Dasymys*	*rufulus*	–	Sawmill savanna Yéképé
1987-60	–	7.VI.1969	*Dasymys*	*rufulus*	–	Sawmill savanna Yéképé
1987-61	–	7.VI.1969	*Dasymys*	*rufulus*	–	Sawmill savanna Yéképé
1987-62	–	7.VI.1969	*Dasymys*	*rufulus*	–	Sawmill savanna Yéképé
1987-63	L475	16.VI.1966	*Praomys*	*rostratus*	–	Mont Nimba
1987-64	L478	16.VI.1966	*Praomys*	*rostratus*	–	Mont Nimba
1987-65	–	8.VI.1969	*Praomys*	*tullbergi*	–	Mont Nimba
1987-66	50	25.VI.1966	*Hylomyscus*	*simus*	–	New Campo
1987-67	507	25.VI.1966	*Mus*	*setulosus*	–	New Campo
1987-69a	–	10.IX.1966	*Dasymys*	*rufulus*	–	Mont Nimba
1987-69b	–	10.IX.1966	*Dasymys*	*rufulus*	–	Mont Nimba
1987-69c	–	10.IX.1966	*Dasymys*	*rufulus*	–	Mont Nimba
1991-1560	–	–	*Dephomys*	*defua*	–	Ziéla
1991-1561	–	–	*Dephomys*	*defua*	sp.	Ziéla
1991-2058	6175	?-04-02	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2059	6317	–	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2060	–	1961	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2061	–	1961	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2062	–	1961	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2063	–	1961	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2064	–	1961	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2065	–	1961	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2066	–	1961	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2067	–	1961	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2068	–	1961	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2069	–	1961	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2070	–	1961	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2071	–	1961	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2072	–	1961	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2073	–	1956	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2074	–	1956	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2075	–	1956	*Lophuromys*	*sikapusi*	–	Ziéla
1991-2076	6352	–	*Lophuromys*	*sikapusi*	–	Veblo
1991-2077	–	1956	*Lophuromys*	*sikapusi*	–	Véblo
1991-2078	–	1956	*Lophuromys*	*sikapusi*	–	Véblo
1991-2079	–	II.1964	*Lophuromys*	*sikapusi*	–	Mont Nimba
1991-2080	–	II.1964	*Lophuromys*	*sikapusi*	–	Mont Nimba
1991-2081	–	II.1964	*Lophuromys*	*sikapusi*	–	Mont Nimba
1991-2082	–	1957	*Lophuromys*	*sikapusi*	–	Mont Nimba
1991-2083	–	1957	*Lophuromys*	*sikapusi*	–	Mont Nimba
1991-2085	–	1957	*Lophuromys*	*sikapusi*	–	Sérengbara
1991-2086	–	1957	*Lophuromys*	*sikapusi*	–	Sérengbara
1991-2087	–	X.1964	*Lophuromys*	*sikapusi*	–	Yalé
1991-2088	–	–	*Lophuromys*	*sikapusi*	–	Yalé
1991-2089	–	–	*Lophuromys*	*sikapusi*	–	Yalé
1991-2090	–	X.1956	*Lophuromys*	*sikapusi*	–	Gouéla
1991-2092	–	24.X.1956	*Lophuromys*	*sikapusi*	–	Zougépo
1991-2094	–	8.V.1960	*Dasymys*	*rufulus*	–	Mont Nimba
1991-2095	–	8.V.1960	*Dasymys*	*rufulus*	–	Mont Nimba
1991-2096	–	8.V.1960	*Dasymys*	*rufulus*	–	Mont Nimba
1991-2097	–	8.V.1960	*Dasymys*	*rufulus*	–	Mont Nimba

Appendix 3. — Continuation.

Catalogue number MNHN-ZM-MO-	Field number	Date of collect	Genus	Initial species	Updated species	Locality
1991-2098	–	8.V.1960	*Dasymys*	*rufulus*	–	Mont Nimba
1991-2099	–	–	*Hybomys*	*planifrons*	*T. planifrons*	Boda
1991-2100	–	1957	*Hybomys*	*planifrons*	*T. planifrons*	Mont Nimba
1991-2101	46-10-172	–	*Dephomys*	*defua*	sp.	Mt Nimba
1991-2102	–	–	*Dephomys*	*defua*	sp.	Ziéla
1991-2103	–	–	*Dephomys*	*defua*	sp.	Ziéla
1991-2104	–	IV.1957	*Malacomys*	*edwardsi*	–	Ziéla
1991-2105	–	IV.1957	*Malacomys*	*edwardsi*	–	Ziéla
1991-2106	–	IV.1957	*Malacomys*	*edwardsi*	–	Ziéla
1991-2107	6369	–	*Malacomys*	*edwardsi*	–	Veblo
1991-2108	6391	26.X.1957	*Malacomys*	*edwardsi*	–	Veblo
1991-2109	6369	–	*Malacomys*	*edwardsi*	–	Véblo
1991-2110	6391	–	*Malacomys*	*edwardsi*	–	Véblo
1991-2111	–	–	*Malacomys*	*edwardsi*	–	Mont Nimba
1991-2112	–	–	*Malacomys*	*edwardsi*	–	Ziéla
1991-2113	9	–	*Malacomys*	*longipes*	–	Ziéla
1991-2114	46-10-056	–	*Grammomys*	*rutilans*	*macmillani*	Mont Nimba
1991-2115	–	–	*Grammomys*	*rutilans*	*macmillani*	Mont Nimba
1991-2116	VDL23	–	*Grammomys*	*buntingi*	*macmillani*	Mt Nimba
1991-2117	46-10-135	–	*Grammomys*	*buntingi*	*macmillani*	Mont Nimba
1991-2118	–	–	*Grammomys*	*buntingi*	*macmillani*	Mont Nimba
1991-2120	6093	–	*Hylomyscus*	*simus*	–	Ziéla
1991-2121	103	27.X.1956	*Hylomyscus*	*simus*	–	Ziéla
1991-2122	6089	19.IX.1956	*Hylomyscus*	*simus*	–	Ziéla
1991-2123	6104	V.1957	*Hylomyscus*	*simus*	–	Nion crest
1991-2124	6104	V.1957	*Hylomyscus*	*simus*	–	Nion crest
1991-2125	6116	–	*Hylomyscus*	*simus*	–	Mont Nimba (around)
1991-2126	6330	18.II.1957	*Hylomyscus*	*simus*	–	Véblo
1991-2127	–	–	*Hylomyscus*	*alleni*	*simus*	Ouyakoré
1991-2128	–	–	*Hylomyscus*	*alleni*	*simus*	Ouyakoré
1991-2130	6370	1961	*Hylomyscus*	*simus*	–	Ziéla
1991-2131	6377	1961	*Hylomyscus*	*simus*	–	Ziéla
1991-2133	–	–	*Praomys*	*rostratus*	–	Mont Nimba
1991-2135	–	–	*Praomys*	*rostratus*	–	Ziéla
1991-2136	6363	–	*Praomys*	*rostratus*	–	Ziéla
1991-2137	–	–	*Praomys*	*rostratus*	–	Ziéla
1991-2138	–	–	*Praomys*	*rostratus*	–	Ziéla
1991-2139	–	–	*Praomys*	*misonnei*	–	camp Cyathea,
1991-2140	–	–	*Praomys*	*misonnei*	sp.	Ziéla
1991-2141	6353	–	*Praomys*	*misonnei*	sp.	Ziela
1991-2142	–	–	*Praomys*	*misonnei*	–	Gouéla
1991-2143	–	–	*Praomys*	*misonnei*	–	Danipleu
1991-2144	–	–	*Praomys*	*misonnei*	sp.	Ziéla
1991-2145	–	–	*Praomys*	*misonnei*	sp.	Ziéla
1991-2146	–	–	*Praomys*	*misonnei*	sp.	Ziéla
1991-2147	6074?	–	*Lemniscomys*	*striatus*	–	Yalé
1991-2154	6343	17.X.1956	*Mastomys*	sp.	–	Danipleu
1991-2155	6362	17.X.1956	*Mastomys*	sp.	–	Yalé
1991-2156	6360	26.X.1956	*Mastomys*	sp.	–	Campment Foromo
1991-2157	–	6.I.1956	*Mastomys*	sp.	–	Mont Nimba
1991-2158	–	1963	*Mastomys*	sp.	–	Yomou
1991-2159	–	1957	*Mastomys*	sp.	–	Sérengbara
1991-2160	–	1957	*Mastomys*	sp.	–	Sérengbara
1991-2161	6108	V.1957	*Mastomys*	sp.	–	Véblo
1991-2162	6112	1957-05	*Mastomys*	sp.	–	Véblo
1991-2163	6321	14.X.1956	*Mastomys*	sp.	–	Véblo
1991-2164	6336	14.X.1956	*Mastomys*	sp.	–	Véblo
1991-2165	6345	14.X.1956	*Mastomys*	sp.	–	Véblo
1991-2166	6339	30.X.1956	*Mastomys*	sp.	–	Gouéla
1991-2167	6359	30.X.1956	*Mastomys*	sp.	–	Gouéla
1991-2168	6366	30.X.1956	*Mastomys*	sp.	–	Gouéla
1991-2169	–	V.1957	*Mastomys*	sp.	–	Gouéla
1991-2170	–	V.1957	*Mastomys*	sp.	–	Gouéla
1991-2180	6169	20.V.1957	*Mastomys*	sp.	–	Zouguépo
1991-2181	6174	V.1957	*Mastomys*	sp.	–	Zouguépo
1991-2182	6177	15.V.1957	*Mastomys*	sp.	–	Zouguépo
1991-2183	6189	15.V.1957	*Mastomys*	sp.	–	Zouguépo
1991-2184	6200	15.V.1957	*Mastomys*	sp.	–	Zouguépo

Appendix 3. — Continuation.

Catalogue number MNHN-ZM-MO-	Field number	Date of collect	Genus	Initial species	Updated species	Locality
1991-2185	6053	17.IX.1956	*Mastomys*	sp.	–	Nzo
1991-2186	–	17.IX.1956	*Mastomys*	sp.	–	Nzo
1991-2187	6064	17.IX.1956	*Mastomys*	sp.	–	Nzo
1991-2188	6322	4.X.1956	*Mastomys*	sp.	–	Nzo
1991-2189	6390	17.X.1956	*Mastomys*	sp.	–	Nzo
1991-2190	–	24.IX.1956	*Mastomys*	sp.	–	Nzo
1991-2191	–	24.IX.1956	*Mastomys*	sp.	–	Nzo
1991-2192	–	24.IX.1956	*Mastomys*	sp.	–	Nzo
1991-2193	–	24.IX.1956	*Mastomys*	sp.	–	Nzo
1991-2194	–	24.IX.1956	*Mastomys*	sp.	–	Nzo
1991-2195	–	24.IX.1956	*Mastomys*	sp.	–	Nzo
1991-2196	–	24.IX.1956	*Mastomys*	sp.	–	Nzo
1991-2197	6158	17.III.1957	*Mastomys*	sp.	–	Ziéla
1991-2198	6180	5.IV.1957	*Mastomys*	sp.	–	Ziéla
1991-2199	6181	17.III.1957	*Mastomys*	sp.	–	Ziéla
1991-2200	6192	IV.1957	*Mastomys*	sp.	–	Ziéla
1991-2201	6316	27.IX.1956	*Mastomys*	sp.	–	Ziéla
1991-2202	–	XI.1956	*Mastomys*	sp.	–	Ziéla
1991-2203	–	XI.1956	*Mastomys*	sp.	–	Ziéla
1991-2204	–	XI.1956	*Mastomys*	sp.	–	Ziéla
1991-2205	–	XI.1956	*Mastomys*	sp.	–	Ziéla
1991-2206	–	1956	*Mastomys*	sp.	–	Ziéla
1991-2207	–	5.III.1957	*Mastomys*	sp.	–	Ziéla
1991-2208	–	5.III.1957	*Mastomys*	sp.	–	Ziéla
1991-2209	6198	V.1957	*Mastomys*	sp.	–	Ziéla
1991-2210	–	1958	*Mastomys*	sp.	–	Ziéla
1991-2211	–	1958	*Mastomys*	sp.	–	Ziéla
1991-2212	–	1958	*Mastomys*	sp.	–	Ziéla
1991-2213	–	1958	*Mastomys*	sp.	–	Ziéla
1991-2214	–	1958	*Mastomys*	sp.	–	Ziéla
1991-2215	–	1958	*Mastomys*	sp.	–	Ziéla
1991-2216	–	1961	*Mastomys*	sp.	–	Ziéla
1991-2217	–	1961	*Mastomys*	sp.	–	Ziéla
1991-2218	–	1961	*Mastomys*	sp.	–	Ziéla
1991-2219	–	1961	*Mastomys*	sp.	–	Ziéla
1991-2220a	–	–	*Lemniscomys*	*striatus*	–	Mont Nimba (around)
1991-2220b	–	–	*Lemniscomys*	*striatus*	–	Mont Nimba (around)
1991-2220c	–	–	*Lemniscomys*	*striatus*	–	Mont Nimba (around)
1991-2220d	–	–	*Lemniscomys*	*striatus*	–	Mont Nimba (around)
1991-2220e	–	–	*Lemniscomys*	*striatus*	–	Mont Nimba (around)
1991-2220f	–	–	*Lemniscomys*	*striatus*	–	Mont Nimba (around)
1991-2220g	–	–	*Lemniscomys*	*striatus*	–	Mont Nimba (around)
1991-2220h	–	–	*Lemniscomys*	*striatus*	–	Mont Nimba (around)
1991-2220i	–	–	*Lemniscomys*	*striatus*	–	Mont Nimba (around)
1991-2220j	–	–	*Lemniscomys*	*striatus*	–	Mont Nimba (around)
1991-2222	6349	23.IX.1956	*Lemniscomys*	*striatus*	–	Ziéla
1991-2223	98	25.X.1956	*Lemniscomys*	*striatus*	–	Nzo
1991-2224	–	1961	*Lemniscomys*	*striatus*	–	Ziéla
1991-2225	–	1961	*Lemniscomys*	*striatus*	–	Ziéla
1991-2226	–	1961	*Lemniscomys*	*striatus*	–	Ziéla
1991-2228	–	–	*Uranomys*	*ruddi*	–	Ziéla
1991-2229	–	–	*Uranomys*	*ruddi*	–	Mont Nimba
1991-2230	652	–	*Rattus*	*rattus*	–	Mont Nimba
1991-2232	–	1956	*Rattus*	*rattus*	–	Ziéla
1991-2233	–	1956	*Rattus*	*rattus*	–	Ziéla
1991-2234	–	1956	*Rattus*	*rattus*	–	Yomou
1991-2235	–	1956	*Rattus*	*rattus*	–	Yalé
1991-2236	–	III.1957	*Mus*	*musculoides*	–	Ziéla
1991-2237	–	IV.1957	*Mus*	*musculoides*	–	Ziéla
1991-2238	6159	31.III.1957	*Mus*	*musculoides*	–	Ziéla
1991-2239	6198	V.1957	*Mus*	*musculoides*	–	Ziéla
1991-2240	–	III.1957	*Mus*	*musculoides*	–	Ziéla
1991-2241	6172	V.1957	*Mus*	*musculoides*	–	Ziéla
1991-2242	–	V.1957	*Mus*	*musculoides*	–	Ziéla
1991-2243	6155	28.II.1957	*Mus*	*musculoides*	–	Ziéla
1991-2244	–	1961	*Mus*	*musculoides*	–	Ziéla
1991-2245	–	1957	*Mus*	*musculoides*	–	Ziéla
1991-2246	–	–	*Mus*	*musculoides*	–	Ziéla

Appendix 3. — Continuation.

Catalogue number MNHN-ZM-MO-	Field number	Date of collect	Genus	Initial species	Updated species	Locality
1991-2247	–	1965	*Mus*	*musculoides*	–	Ziéla
1991-2248	–	1965	*Mus*	*musculoides*	–	Ziéla
1991-2250	6195	20.V.1957	*Mus*	*setulosus*	–	Mont Nimba
1991-2252	–	1961	*Mus*	*setulosus*	–	Ziéla
1991-2253	–	1961	*Mus*	*setulosus*	–	Ziéla
1991-2254	–	1961	*Mus*	*setulosus*	–	Ziéla
1991-2255	–	1961	*Mus*	*setulosus*	–	Ziéla
1991-2256	–	–	*Mus*	*setulosus*	–	Ziéla
1991-2257	–	1963	*Mus*	*setulosus*	–	Yomou
1991-2258	–	1964	*Mus*	*setulosus*	–	Yalé
1991-2260	–	6.I.1986	*Mastomys*	sp.	–	Mont Nimba
1991-2261	6151	–	*Cricetomys*	*emini*	–	Mont Nimba
1991-2264	–	–	*Dendromus*	*melanotis*	–	Nion crest
1991-2267	–	–	*Dendromus*	*melanotis*	–	Nion crest
1991-2272	–	29.X.1956	*Gerbilliscus*	*kempi*	*kempii*	Ziéla
1991-2273	6178	–	*Gerbilliscus*	*validus*	*kempii*	Ziéla
1991-2276	6351	–	*Dasymys*	*incomtus*	*rufulus*	Yalé
1991-2277	–	15.X.1956	*Dasymys*	*rufulus*	–	Yalé
1991-2278	–	15.X.1956	*Dasymys*	*rufulus*	–	Yalé
1991-2279	–	15.X.1956	*Dasymys*	*rufulus*	–	Yalé
1991-2280	–	15.X.1956	*Dasymys*	*rufulus*	–	Yalé
1991-2281	–	15.X.1956	*Dasymys*	*rufulus*	–	Yalé
1991-2282	–	16.X.1956	*Dasymys*	*rufulus*	–	Yalé
1991-2283	–	16.X.1956	*Dasymys*	*rufulus*	–	Yalé
1991-2284	–	2.IV.1957	*Dasymys*	*rufulus*	–	Yalé
1991-2285	6156	15.V.1957	*Rattus*	*rattus*	–	Zouguépa
1991-2286	–	V.1957	*Rattus*	*rattus*	–	Nion crest
1991-2288	–	1961	*Rattus*	*rattus*	–	Ziéla
1991-2289	–	1961	*Rattus*	*rattus*	–	Ziéla
1991-2290	–	1961	*Rattus*	*rattus*	–	Ziéla
1991-2291	–	1961	*Rattus*	*rattus*	–	Ziéla
1991-2292	–	1961	*Rattus*	*rattus*	–	Ziéla
1991-2293	–	27.IX.1956	*Praomys*	*tullbergi*	–	Ziéla
1991-2294	–	2.XI.1956	*Praomys*	*tullbergi*	–	Trou zougrépo
1991-2295	–	2.XI.1956	*Praomys*	*tullbergi*	–	Trou zougrépo
1991-2296	–	15.X.1956	*Praomys*	*tullbergi*	–	Gouéla
1991-2297	–	–	*Praomys*	*tullbergi*	–	Gouéla
1991-2298	6157	15.V.1957	*Praomys*	*tullbergi*	–	Zougrépo
1991-2299	6107	V.1957	*Praomys*	*tullbergi*	–	Nion crest
1991-2300	6123	V.1957	*Praomys*	*tullbergi*	–	Nion crest
1991-2301	6153	–	*Praomys*	*tullbergi*	–	Mont Nimba (around)
1991-383	–	–	*Mastomys*	*erythroleucus*	–	Mont Nimba?
1991-383	–	–	*Mastomys*	*erythroleucus*	–	Mont Nimba?
1992-102	43	–	*Graphiurus*	*murinus*	–	Nzo
1992-112	–	?-10-15	*Graphiurus*	*crassicaudatus*	–	Nzo
1992-114	56	–	*Xerus*	*erythropus*	–	Ziéla
1992-115	93	–	*Xerus*	*erythropus*	–	Ziéla
1992-116	652	–	*Xerus*	*erythropus*	–	Mont Nimba
1992-1742	189	–	*Hybomys*	*planifrons*	*T. planifrons*	Yomou
1992-1748	–	28.III.1958	*Oenomys*	*ornatus*	–	Yomou
1992-1749	–	1963	*Oenomys*	*ornatus*	–	Yomou
1992-1752	–	–	*Hylomyscus*	*alleni*	*simus*	Yalé
1992-184	1280	9.V.1966	*Dasymys*	*rufulus*	–	Grassfield
1992-185	–	VIII.1966	*Dasymys*	*rufulus*	–	Grassfield
1992-186	–	10.IX.1966	*Dasymys*	*rufulus*	–	Grassfield
1992-187	–	10.IX.1966	*Dasymys*	*rufulus*	–	Grassfield
1992-188	–	31.V.1969	*Dasymys*	*rufulus*	–	Mont Nimba
1992-189	–	31.V.1969	*Dasymys*	*rufulus*	–	Mont Nimba
1992-190	–	31.V.1969	*Dasymys*	*rufulus*	–	Mont Nimba
1992-193	–	1969	*Lemniscomys*	*striatus*	–	Mont Nimba
1992-194	–	1966	*Lophuromys*	*sikapusi*	–	Grassfield
1992-195	–	1966	*Lophuromys*	*sikapusi*	–	Grassfield
1992-196	–	1966	*Lophuromys*	*sikapusi*	–	Grassfield
1992-197	–	16.VIII.1966	*Lophuromys*	*sikapusi*	–	Yekepa
1992-198	–	1966	*Lophuromys*	*sikapusi*	–	Mont Nimba
1992-199	479	–	*Praomys*	*daltoni*	–	Airfield
1992-200	1273	V.1966	*Hylomyscus*	*simus*	–	Grassfield South
1992-201	1275	V.1966	*Hylomyscus*	*simus*	–	Grassfield South

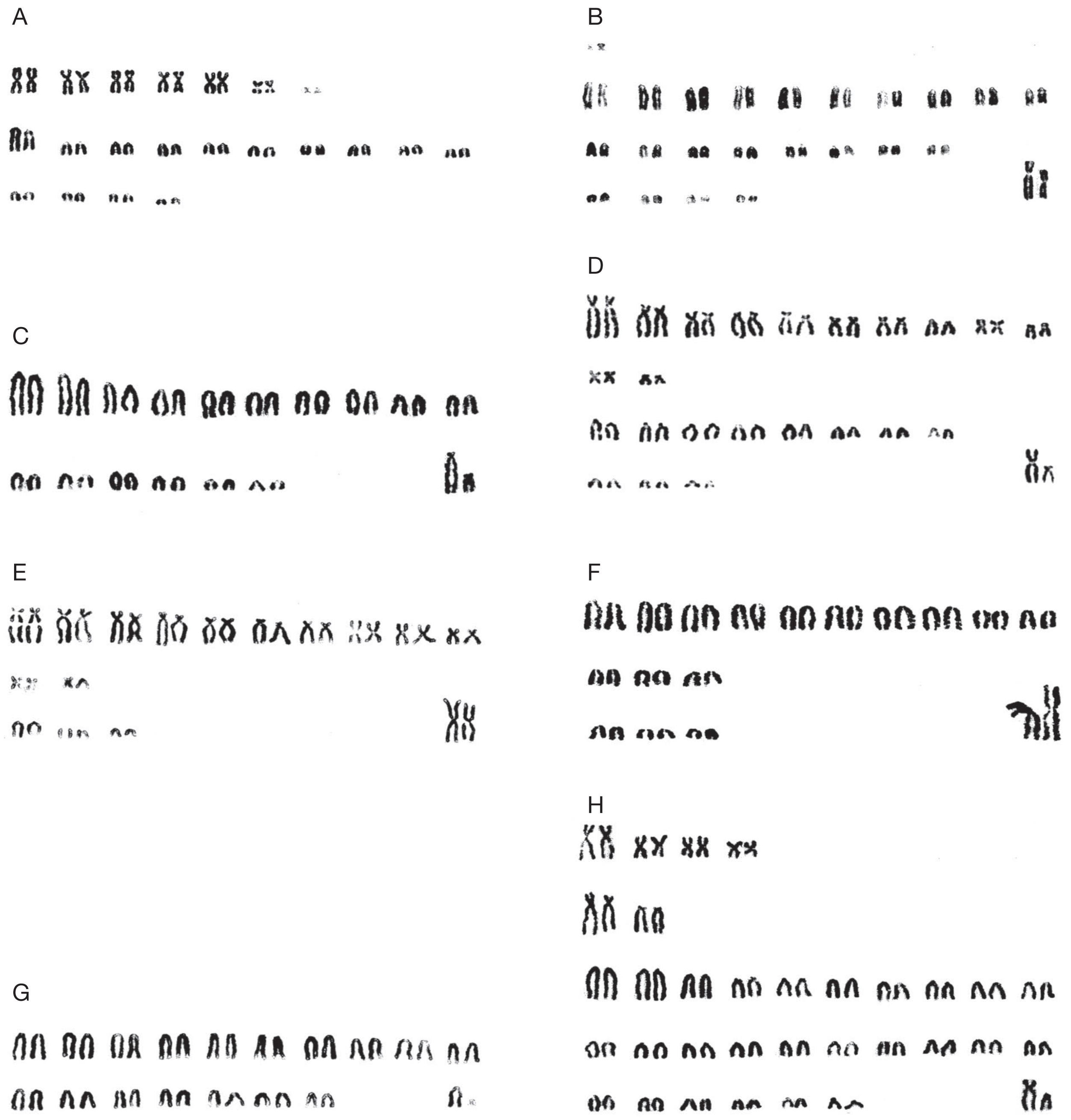
Appendix 3. — Continuation.

Catalogue number MNHN-ZM-MO-	Field number	Date of collect	Genus	Initial species	Updated species	Locality
1992-202	1274	V.1966	*Praomys*	*tullbergi*	–	Grassfield South,
1992-203	1283	10.V.1966	*Praomys*	*rostratus*	–	grassfield East
1992-204	1272	V.1966	*Praomys*	*tullbergi*	–	grassfield East
1992-205	–	19.IX.1966	*Rattus*	*rattus*	–	Grassfield new camp Roadstock
1992-206	–	10.IX.1966	*Rattus*	*rattus*	–	forest
1992-207	–	–	*Lemniscomys*	*bellieri*	–	Mont Nimba
1992-208	ESY573	20.X.1966	*Mus*	*minutoides*	–	Grassfield
1992-209	–	25.X.1966	*Mus*	*setulosus*	–	vallée de Seka between Niomouya and
1992-2176	–	20.IX.1956	*Mus*	*musculoides*	–	Gbakoré
1992-2177	–	9.X.1956	*Mus*	*musculoides*	–	Ziéla
1992-2178	–	25.X.1956	*Mus*	*musculoides*	–	Yalé
1992-2179	–	29.X.1956	*Mus*	*musculoides*	–	Ziéla
1992-2191	–	15.X.1956	*Mus*	*musculoides*	–	Gouéla
1992-2192	–	IX.1956	*Mus*	*musculoides*	–	Gouéla
1992-2193	–	IX.1956	*Mus*	*musculoides*	–	Gouéla
1992-590	–	1968	*Mastomys*	sp.	–	Serengbara
1992-592	–	X.1966	*Dasymys*	*rufulus*	–	Greenfield savanna
1992-97	–	–	*Graphiurus*	*murinus*	–	Nion crest
1993-100	–	XII.1959	*Mastomys*	*natalensis*	–	Gopoupleu
1993-101	–	7.I.1959	*Mastomys*	*natalensis*	–	Gopoupleu
1993-102	–	10.I.1959	*Mastomys*	*natalensis*	–	Gopoupleu
1993-103	–	11.I.1959	*Mastomys*	*natalensis*	–	Gopoupleu
1993-104	–	17.I.1959	*Mastomys*	*natalensis*	–	Gopoupleu
1993-105	–	28.I.1959	*Mastomys*	*natalensis*	–	Yealé
1993-106	–	2.II.1959	*Mastomys*	*natalensis*	–	Yealé
1993-107	–	3.II.1959	*Mastomys*	*natalensis*	–	Yealé
1993-107bis	–	30.I.1959	*Mastomys*	*natalensis*	–	Yealé
1993-206	–	28.I.1959	*Mastomys*	*natalensis*	–	Yeolé
1993-33	–	1961	*Mus*	*setulosus*	–	Mont Nimba
1993-4780	–	24.III.1981	*Hylomyscus*	*simus*	–	Mont Nimba
1997-1502	2233	?-12-19	*Dephomys*	sp.	sp.	Kéoulenta
1997-1503	2155	?-12-12	*Hylomyscus*	sp.	*simus*	Mont Nimba
1997-1504	2189	?-12-12	*Hylomyscus*	sp.	*simus*	Mont Nimba
1997-1505	2215	?-12-12	*Hylomyscus*	sp.	*simus*	Mont Nimba
1997-1506	2153	–	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1507	2154	–	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1508	2163	?-12-12	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1509	2164	?-12-10	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1510	2165	–	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1511	2166	?-12-10	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1512	2185	?-12-12	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1513	2173	?-12-11	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1514	2175	?-12-11	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1515	2176	?-12-11	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1516	2178	?-12-11	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1517	2180	?-12-12	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1518	2185	?-12-12	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1519	2187	?-12-12	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1520	2186	?-12-12	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1521	2195	?-12-13	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1522	2199	?-12-14	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1523	2200	?-12-15	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1524	2202	?-12-16	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1525	2204	?-12-16	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1526	2205	?-12-16	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1527	2206	?-12-14	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1528	2209	?-12-16	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1529	2210	?-12-17	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1530	2211	?-12-17	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1531	2212	?-12-17	*Lophuromys*	sp.	*sikapusi*	Mont Nimba
1997-1542	2188	?-12-13	*Hybomys*	sp.	–	Mont Nimba
1997-1543	2134	?-12-08	*Praomys*	*misonnei*	sp.	Ziéla
1997-1544	2135	?-12-08	*Praomys*	*misonnei*	sp.	Ziéla
1997-1545	2136	?-12-08	*Praomys*	*misonnei*	sp.	Ziéla
1997-1546	2137	?-12-08	*Praomys*	*misonnei*	sp.	Ziéla
1997-1547	2138	?-12-08	*Praomys*	*misonnei*	sp.	Ziéla

Appendix 3. — Continuation.

Catalogue number MNHN-ZM-MO-	Field number	Date of collect	Genus	Initial species	Updated species	Locality
1997-1548	2139	?-12-08	*Praomys*	*misonnei*	sp.	Ziéla
1997-1549	2146	–	*Praomys*	*misonnei*	sp.	Ziéla
1997-1550	2147	?-09-09	*Praomys*	*misonnei*	sp.	Mont Nimba
1997-1551	2148	?-09-09	*Praomys*	*misonnei*	sp.	Mont Nimba
1997-1552	2149	?-09-09	*Praomys*	*misonnei*	sp.	Mont Nimba
1997-1553	2190	?-12-13	*Praomys*	*misonnei*	sp.	Mont Nimba
1997-1554	2192	?-12-13	*Praomys*	*misonnei*	sp.	Mont Nimba
1997-1555	2193	?-12-13	*Praomys*	*misonnei*	sp.	Mont Nimba
1997-1556	2214	?-09-17	*Praomys*	*misonnei*	sp.	Mont Nimba
1997-1557	2227	?-12-19	*Praomys*	*misonnei*	sp.	Mont Nimba
1997-1558	2229	?-12-19	*Praomys*	*misonnei*	sp.	Mont Nimba
1997-1559	2230	?-12-19	*Praomys*	*misonnei*	sp.	Mont Nimba
1997-1560	2231	?-12-19	*Praomys*	*misonnei*	sp.	Mont Nimba
1997-1561	2232	?-12-19	*Praomys*	*misonnei*	sp.	Mont Nimba
1997-1562	2133	?-12-08	*Gerbilliscus*	*kempi*	*kempii*	Mont Nimba
1997-1563	2150	–	*Tatera*	sp.	*G. kempii*	Mont Nimba
1997-1564	2160	?-12-10	*Gerbilliscus*	sp.	–	Monts Nimba
1997-1983	102	27.X.1956	*Mus*	*setulosus*	–	Ziéla
1997-1984	107	25.X.1956	*Mus*	*setulosus*	–	Ziéla
1997-395	–	3.II.1959	*Praomys*	*rostratus*	–	Yéalé
1998-1012	–	18.IV.1992	*Mus*	*musculoides*	–	Mifergui, in a shop
1998-1013	–	5.V.1992	*Mylomys*	*dybowskii*	–	Mifergui
1998-1021	2213	?-12-17	*Lemniscomys*	sp.	–	Koelenta
2006-610	–	8.X.1966	*Arvicanthis*	*rufinus*	sp.	Grassfield
2008-191	P0028	11.III.2000	*Praomys*	*rostratus*	–	Gbakoré
2008-192	P0029	11.III.2000	*Praomys*	*rostratus*	–	Gbakoré
2008-193	P0031	12.III.2000	*Praomys*	*rostratus*	–	Gbakoré
2008-194	P0037	5.IV.2000	*Praomys*	*rostratus*	–	Gbakoré
2008-195	P0030	11.III.2000	*Praomys*	*tullbergi*	–	Gbakoré
2011-322	P0005	–	*Gerbilliscus*	*kempi*	*G. kempii*	Gbakoré
2011-336	P0007	III.2000	*Funisciurus*	sp.	–	Gbakoré
2014-1138	Gan07	13.VI.2011	*Malacomys*	*edwardsi*	–	Gangra
2014-1139	BHT326	14.V.2010	*Malacomys*	*edwardsi*	–	Sapo
2014-1140	VAY01	10.VII.2011	*Malacomys*	*edwardsi*	–	Vayampah
2014-1141	VAY05	10.VII.2011	*Malacomys*	*edwardsi*	–	Vayampah
2014-1142	VAY13	11.VII.2011	*Malacomys*	*edwardsi*	–	Vayampah
2014-1143	VAY46	15.VII.2011	*Malacomys*	*edwardsi*	–	Vayampah
2014-1144	VAY56	17.VII.2011	*Malacomys*	*edwardsi*	–	Vayampah
2014-1145	VAY62	17.VII.2011	*Malacomys*	*edwardsi*	–	Vayampah
2017-673	–	–	–	–	*G. kempii*	Gbakoré

Appendix 4. — Nimba rodent karyotypes: **A**, *Dephomys* cf. *eburnea* (SER 167, MNHN-ZM-2021-1694); **B**, *Malacomys edwardsi* Rochebrune, 1885 (SER 164, MNHN-ZM-2022-944); **C**, *Praomys rostratus* (Miller, 1900) (GBIE-219, MNHN-ZM- 2021-1886); **D**, *Hylomyscus simus* (Allen & Coolidge, 1930) (SER 173, MNHN-ZM-2021-1835); **E**, *Mastomys natalensis* (Smith, 1834) (NIM124, MNHN-ZM-2021-1776); **F**, *Mus minutoides* A.Smith, 1834 (GBIE 230, MNHN-ZM-2022-935); **G**, *Mus setulosus* Peters, 1876 (SER 169, MNHN-ZM-2022-936); **H**, *Lophuromys sikapusi* (Temminck, 1853) (GBI-250, MNHN-ZM-2021-1713).



Appendix 5. — Rodents collected in Nimba: **A**, *Gerbilliscus kempii* (Wroughton, 1906); **B**, *Dasymys rufulus* Miller, 1900; **C**, *Praomys rostratus* (Miller, 1900); **D**, *Hylomyscus simus* (Allen & Coolidge, 1930); **E**, *Mus setulosus* Peters, 1876; **F**, *Dendromus lachaisei* Denys & Aniskine, 2012. Photos: C. Denys.

APPENDIX 6. — Rodents collected in Nimba: **A**, *Lophuromys sikapusi* (Temminck, 1853); **B**, *Grammomys macmillani* (Wroughton, 1907); **C**, *Dephomys defua* (Miller, 1900); **D**, *Cricetomys gambianus* Waterhouse, 1840; **E**, *Malacomys cansdalei* Ansell, 1958; **F**, *Malacomys edwardsi* Rochebrune, 1885. Photos: A, C, D, E, F, A. Monadjem; B, C. Denys.

Appendix 7. — Rodents collected in Nimba: **A**, *Heliosciurus rufobrachium* (Waterhouse, 1842); **B**, camera trap picture *Paraxerus poensis* (A.Smith, 1830); **C**, Camera trap picture *Funisciurus pyrrhopus* (Cuvier, 1833); **D**, camera trap picture *Protoxerus stangeri* (Waterhouse, 1842); **E**, *Anomalurus derbianus* (Gray, 1842), NMK340; **F**, *Anomalurus beecrofti* Fraser, 1853 NMK110; **G**, *Idiurus macrotis* Miller, 1898 NMK540. Photos: A, E, F, G, A. Monadjem; B, C, D, camera traps images Mission 4.

APPENDIX 8. — Camera traps in Mission 4 on the Liberian side of Mount Nimba: **A**, *Atherurus africanus* Gray, 1842; **B**, *Cricetomys gambianus* Waterhouse, 1840.